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ABSTRACT

Focusing on systems and approaches to providing career guidance services rather than specific techniques, this guide is divided into eight chapters. Chapters 1-4 describe the state of the art of career guidance, including discussion of theory and prior research, theories of vocational development, career guidance concepts and practices, and career guidance as part of career education. Chapter 5 focuses more specifically on the information service function of career guidance. Various information dissemination methods are briefly described, including a description of eight prominent computerized guidance systems. Project VIEW (Vocational Information for Education and Work) and the Guidance Information System (GIS) are described in some detail. Chapter 6 reviews manpower forecasting techniques and procedures used by the U.S. Department of Labor to project labor market needs. Chapter 7 provides an overview of management information systems and their relevance to career planning and introduces a planning technique having relevancy to career planning at the local level. Chapter 8 looks ahead at specific approaches and techniques in career guidance. A bibliography is included and a description of the Management Information System for Vocational Education (MISVE) is appended. (TA)

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FINAL REPORT

Project No. 498AH50221
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A NEEDS ASSESSMENT FOR CAREER PLANNING AND PREPARATION IN CONNECTICUT

A Counselor's Guide for Comprehensive Career Guidance Services

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U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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INTRODUCTION

Developing a counselor's guide for career guidance services which is both descriptive of the state of the art, as well as practical, is a complex and difficult task. Counselors differ in the amount of knowledge they possess of career development concepts as well as in the kinds of career guidance skills which they have acquired. This guide, therefore, is not intended to be complete, nor will it be of equal value to all readers. It is designed to be illustrative, to be expanded and elaborated upon by some users, while it may serve as a road map to others. Each reader will use this guide differently according to his or her personal need and the needs of his or her school system.

This guide is divided into a number of chapters, the contents of which individual readers may wish to consider in developing their approaches to providing career guidance services. Chapters I-IV set the stage -- they describe where we have been and suggest where we are heading in career guidance. Chapter V focuses more specifically on the information service function of career guidance. Various information dissemination methods are briefly described. Project VIEW and the Guidance Information System (GIS) are described in some detail in Chapter V. Chapter VI reviews manpower forecasting techniques. How good is the information we are providing students? In Chapter VI, Dr. Paul Tarasuk reviews procedures used by the Department of Labor to project labor market needs. Chapter VII provides the reader with an overview of Management Information Systems and their relevance to career planning. Chapter VII introduces a planning technique used by several large educational groups, e.g., state education departments, having relevancy to career planning at the local level. Chapter VIII offers the reader specific approaches and techniques in career guidance.

This guide provides the reader with a basic foundation for providing career guidance services. It is not intended to be a "cook-book" approach to career guidance. The author respects the counselors' expertise and ability to provide meaningful counseling experiences, therefore, the focus of this document is on systems and approaches rather than specific techniques.

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Chapter I

CAREER GUIDANCE: THEORY AND PRIOR RESEARCH

Theories of Career Choice

Introduction

Recent refinements and extension of counseling theory and techniques together with advances in career development theories and practices in career guidance have resulted in more effective career guidance programs and the use of new career guidance techniques. Providing help in making more adequate decisions relating to the world of work has been a theme of the career guidance movement since its inception (Parsons, 1909). To understand the current practices, techniques, and tools of career guidance, a comprehension of the theories from which they derive is essential.

Theories of Career Development

Theories of career development, and more generally the role of man in the world of work, have drawn heavily from the fields of anthropology, sociology, economics, literature and religion. Historically, career development theory began with concepts derived from the psychology of individual differences.

Trait and Factor Theories

Trait and factor theory evolved from the work of Galton and Cattell. Spurred on by the psychometric movement, the trait and factor theory found its way into the counseling field (Katz, 1963; Williamson, 1965). The elements of trait and factor theory are clearly evident in Parson's (1909) original description of occupational choice and the model of career guidance that emerged. The trait and factor theory,

simply put, holds that: people have different traits; each occupation requires a unique set of characteristics; and, vocational guidance should match people and jobs. Counseling ala Parsons consists, then, of studying the individual, studying occupations, and matching the right person with the right job. Similarly, the National Vocational Guidance Association (NVGA) (1937) names the study of the individual, the study of occupations, and counseling as the major components of vocational and educational guidance.

Need Theories

General need theories (Forer, 1953; Maslow, 1954) stress the process of career decision-making as being related to the individual's expression of his basic needs and personality make-up. Schaffer (1953) concluded that the most accurate prediction of general job-satisfaction can be inferred from the extent that the person's most important needs are met. Similarly, Allport, Vernon, and Lindzey (1951) have developed a value typology scale which presumably relates decisions, including occupational choice, to the individual's system of values (needs) and his general personality orientation.

Psychoanalytic Theories

Psychoanalytic theory has had its impact on career development theory. Brill (1949) contends that occupational choice rests upon the two key concepts of sublimation and identification. According to Brill, occupations are chosen as general or specific sublimations of fundamental instinctual wishes or needs. The process of identification is also important as key individuals provide role models in the process of occupational choice.

Anne Roe has developed a theory of occupational choice which contains certain psychoanalytic qualities but is clearly

broader in scope. Roe's theory includes a system of classifying occupations (Roe, 1956) into occupational groups which are further subdivided into levels and referred to as the Roe Matrix. Roe's research led her to postulate that there are three basically different psychological climates as a function of early parent-child relations (Roe, 1957). She concludes that it is the basic parental attitude toward the child rather than specific child-rearing techniques, per se, which shape the child's need structure and pattern for satisfying his needs. The mode of need satisfaction, then, influences occupational choice, for occupations become a means for satisfying needs. At least one critic (Osipow, 1968) of Roe's theory has pointed out that the investigations testing her theory have failed to provide validation.

Other theories have been posed which combine many of the underlying concepts mentioned above. More recently, Hoppock, Super, and others have developed comprehensive models which will be discussed later in this chapter.

Career Decision-Making: Process, Event, Outcome or Goal?

Process

While career decision-making and occupational choice are used more or less synonymously, they have come to be used in different contexts to designate a process, an event, an outcome, or a goal. Tiedeman (1961) discusses the process of decision-making and career (vocational) development in the following manner:

> The compromise inherent in discovering and nourishing the area of congruence of person and society as expressed in an individual's vocational behavior is effected within a set of decisions. The set of decisions and the context of relevance for the anticipation and implementation of each constitutes the essence of vocational development.

Career decision-making is closely related to vocational development. One series of events, which may be considered vocational development tasks, involve career decision-making activities. Thus, vocational development may be viewed as a series of decisions, many with direct connection to vocational content or the world of work and others less directly connected, such as perceptions of self.

Event

When viewed as an event, a behavior occurring at a point in time, a career decision can be defined as any behavior that consistently and significantly relates to eventual participation in an occupation (Miller, 1968). Choice is rarely considered spontaneous, however. Holland (1959) observes that:

> At the time of vocational choice the person is the product of the interaction of his particular heredity with a variety of cultural and personal forces including peers, parents and significant adults, his social class, American culture, and the physical environment. Out of this experience the person develops a hierarchy of habitual or preferred methods for dealing with environmental tasks . . . the person making a vocational choice in a sense searches for situations which satisfy his hierarchy of adjustive orientations.

Similarly, Bordin, Nachman and Segal (1963) conclude that a particular choice should be seen as a subgoal in a continuous process, but that a particular choice is not necessarily synonymous with the end of the process.

Outcome

Decision-making can be considered an outcome when it results from some guidance strategy such as a career information delivery system. In a similar vein, decision-making can also be considered a goal of the counselor. To accomplish

such a goal, one must assume that there are inherent in the making of decisions, counseling skills or strategies, e.g., "an effective strategy for analyzing, organizing, and synthesizing information in order to make a choice" (Clarke, Gelatt, and Levine, 1965).

Components of Decision-Making

What, then, are the components of decision-making whether conceived as process, event, outcome or goal? Decisions do not have integrity outside of a context within which a decision is relevant. That is, the decision-making must be viewed in terms of the numbers of options available and the perceived ease at which students may avail themselves of these options. Even more basic to the decision-making process is the matter of freedom to choose. The factors of free and informed choice are related to contextual and social permissiveness. Contextual permissiveness is manifested in the degree of possible access to information and vocational training. According to Herr (1969), free choice of vocational options can exist only when the social structure ascribes equal value to such options. The internal concomitants of free choice are dependent upon the self-knowledge one has, and the degree to which such knowledge is reflected, integrated, and freely expressed behaviorally.

Formal decision-making theory suggests that choice is seen as occurring under conditions of uncertainty or risk (Brayfield and Crites, 1964). The choice process, then, involves assigning a reward value to alternative choices and appraising the chances of realizing each of them. It is postulated that the individual will attempt to maximize the expected value in making a decision (Thorensen and Mehrens, 1967). Several decision theorists (Davidson, Suppes and Siegel, 1957) describe the process of making a decision between uncertain outcomes as requiring reconciliation of such

factors as: the relative valuing of the outcomes, the cost of attaining the outcomes, and the probability that each outcome may occur. These theorists suggest that within any choice or decision the individual must assess his resources and how much of them, tangible or psychological, he wants to commit to a particular alternative in such a manner as to maximize his gain and minimize his loss.

According to some vocational theorists, decisions imply action. Within the concept of decision-making there are behaviors which operate prior to or concurrent with deciding, as well as those behaviors inherent in implementing the decision. Tiedeman (1961) maintains that with regard to each decision, the problem of deciding may be divided into two periods, a period of anticipation and a period of implementation or adjustment. Tiedeman's (1961) conception of decision-making as action oriented is supported by other researchers and theorists, as evidenced in the following quote by Calia (1966):

> It is not only what the student selects out of the myriad of stimuli to which he is exposed that is important, but it is what he does with them after he has made his selection that is highly significant.

Summary

As a result of the above discussion, it seems that although a decision may seem discrete, it is really only a step in a series of previously made decisions. It is influenced by internal and external factors. Career decision-making may then be viewed in the light of career development theory.

Chapter II

THEORIES OF VOCATIONAL DEVELOPMENT

Introduction

Historically, an emphasis on a point-in-time approach to career guidance seems to have led to an emphasis on crisis counseling. The emphasis on guidance services has been almost exclusively within secondary schools. Partly in response to the above-mentioned problems, a theory of vocational or career development has emerged. Career development is viewed as one aspect of the many-faceted development of the individual. The individual does not choose an occupation, but rather makes a series of career and career-related choices at different life stages which, when taken cumulatively, result in career development rather than an occupational choice, per se.

Developmental Psychology

Career development theory and counseling has its antecedents in developmental psychology. Terman (1925), Lazersfield (1931), Buehler (1933), Erikson (1950), and Havighurst (1950) laid the groundwork for developmental counseling theory. Havighurst (1964) presented six stages of vocational development in which the individual, confronted by vocational development tasks and reactions to the tasks, assures a life-style in which he finds meaning in his work role. Ginzberg, Ginsburg, Axelrod, and Herma (1951) surveyed existing theories, found them inadequate, and sought to develop and test their own theory. Ginzberg's theory was the first one that was explicitly developmental and specifically a theory of occupational choice (Zaccaria, 1970).

Recent Theories

Later theorists (Holland, 1966; Tiedeman, 1963; O'Hara,

1963; and Super, 1963) borrowed concepts put forth by developmental psychologists and built more refined and comprehensive theories of career development. Holland's theory (1959, 1966) emphasizes the determinants of occupational choice, as expressed in the following passage:

> Essentially, the present theory assumes that at the time of vocational choice the person is the product of the interaction of his particular heredity with a variety of cultural and personal forces including peers, parents and significant adults, his social class, American culture, and the physical environment. Out of this experience the person develops a hierarchy of habitual or preferred methods of dealing with environmental tasks . . . the person making a vocational choice in a sense "searches" for situations which satisfy his hierarchy of adjustive orientations. (Holland, 1959)

According to Holland, the amount of and the accuracy of the individual's self knowledge and occupational knowledge are of critical importance in the process of occupational choice.

Using Erikson's (1950, 1959) theory of personality development as a base, Tiedeman (1961) and Tiedeman and O'Hara (1963) propose a theory which incorporates the process of decision-making within the broader framework of career development. They see career development as the process of resolving such fundamentally ego-relevant questions as "Who am I (at work)," "What shall I become (at work)," and "How will I implement my being (at work)," etc. In essence, Tiedeman and O'Hara conceptualize career development unfolding as the individual resolves a group of general psychosocial crises, occupationally related special aspects of general psychosocial crises, and as life-long series of problems or decisions (Zaccaria, 1970).

Super's theory of vocational development evolved over several decades and was influenced by the field of developmental psychology including self-concept theory and

developmental stages. Super describes vocational development as the developing and implementing of a self concept in the context of the world of work. Rejecting the concept of occupational choice in favor of career development, Super consistently emphasizes the developmental process unfolding as the individual develops, specifies, and implements his vocational self-concept (Super, 1963). Super's theory is perhaps the broadest and most widely accepted of the contemporary theories of vocational development (Zaccaria, 1970). It is a theory derived through the integration of relevant aspects of existing theories and the additional contribution of Super and his associates. A considerable proportion of research based on Super's theory has resulted in empirical confirmation of the two fundamental aspects of his theory: that career choice is seen as a way in which to implement one's self-concept and that throughout life one is confronted with a series of career development tasks which specify the particular vocational decisions that must be made (Osipow, 1968). Osipow (1968) further states that:

> As a conceptual model, Super's theory seems to be the most highly developed and advanced. This is reflected in its explicitness, its fairly high degree of empirical support, and its substantially large number of applications to human affairs.

Summary

In summary, career (vocational) development has come to be viewed as one aspect of an individual's total development. It is seen as a continuous process that can be examined at various life stages. Theories of career development acknowledge a wide variety of factors which determine or at least influence the process of human development.

Chapter III

CAREER GUIDANCE CONCEPTS AND PRACTICES

Introduction

School counseling in the United States is facing a major crisis today (Watts, 1973). School counseling is confronted with three major problems: counselors have become preoccupied with administrative tasks, notably course scheduling and college admissions; counselors are oriented toward the able, middle class student; and, counselors are oriented toward a one-to-one psychotherapeutic approach. Problems are often deemed to lie within the individual rather than considered to be the result of environmental conditions. To counteract these problems counselors may have to: become more concerned with career guidance; become less preoccupied with one-to-one work with individual students and more involved in group work and in supportive work with teachers; delegate more routine and administrative tasks to paraprofessionals and computers; and, place more emphasis on the setting of behavioral objectives and the measurement of the extent to which they have been achieved. The counseling profession seems to have lost sight of the fact that counseling in the United States grew out of vocational guidance. It seems that what is needed in the guidance profession is a re-focusing of efforts along a career guidance theme.

A Suggested Rationale

One aspect of the rationale for guidance is a perspective on the nature of education. The tasks of education are defined partly by society and partly by the educational institution itself. The goals of education vary depending on the times and on who's doing the defining, but, in general include: the socialization of youth; the advancement of knowledge; and,

service to the community. Guidance plays a supportive role to such general goals as evidenced in the following definition of guidance:

> Guidance is the systematic, professional process of helping the individual through educative and interpretive procedures to gain a better understanding of his own characteristics and potentialities and to relate himself more satisfactorily to social requirements and opportunities in accord with social and moral values. (Mathewson, 1962, p. 141)

Guidance as a Service Function

Guidance can be viewed as a group of services to students. Such services assist the student in developing a well-integrated personality. Counseling is one function of a total guidance program. The concepts of psychosocial crises (Erikson), developmental tasks (Havighurst), and vocational development tasks (Super) can be viewed as vehicles for identifying short-term and intermediate-range goals of guidance, thereby providing cues in terms of the nature and dynamics of guidance practices which will facilitate the realization of desired goals (Zaccaria, 1965). Thus, such tasks constitute reference points upon which the counselor can focus his attention.

Super's Developmental Concepts

Vocational (career) guidance has been described by Super (1951) as:

> . . . a process of helping a person to develop and accept an integrated and adequate picture of himself and his role in the world of work, to test this concept against reality and to convert it into reality, with satisfaction to himself and benefit to society.

Career guidance concepts have applicability for all levels

of education. Havighurst (1953) describes the nature of tasks at the elementary school level as those of acquiring a store of concepts sufficient for thinking effectively about occupational matters. A long-term goal for the vocational development of the child in the elementary school is the creation of a readiness within each individual for the major exploratory activities of the junior high school. The teacher is the key person in the guidance program at the elementary level of education, with the guidance worker playing a largely consultative role (Zaccaria, 1970). Classroom activities at the elementary level articulate with the long range goals of career guidance when reviewed within the structure of developmental tasks.

The student who enters junior high school having been exposed to career guidance activities at the elementary school level is better able to deal with the vocational developmental tasks of adolescence. He will enter junior high school with some basic attitudes and understandings which constitute a foundation for vocational guidance appropriate to the early adolescent period. The general process of vocational development during the adolescent years has been described by Super (1963) in terms of the individual being faced with a problem of crystallizing a tentative and generalized vocational preference. This task is mastered within the broader context of seeking an identity. As a result of career exploration activities, patterns begin to emerge in the form of alternative courses of action and differential consequences. According to Super (1963), a tentative generalized crystallization of a vocational preference should occur and a decision is made. The foci of career guidance at the junior high level are on helping the student make wise decisions relating to long-range vocational developmental tasks and assisting the student at the actual choice or decision points.

Career guidance at the senior high school level involves assisting the student to gain a sense of occupational identity and, more immediately, focusing on helping the student to specify a vocational preference (Super, 1963). A vocational preference differs from a vocational choice in that the former refers to verbal behavior, e.g., an attitude of liking or disliking, whereas vocational choice is more specific and action-oriented.

Clarifying Vocational Choice

Career guidance at the secondary level includes the provision of occupational information, against which the student may test his tentative career choice(s). Nelson (1962) suggests that career choice is as much a matter of rejecting attitudes or patterns as it is acceptance of an occupational preference. Greater vocational realism may be achieved by finding out what occupational activities a client rejects for himself (Nelson, 1962), therefore new occupational information and career exploration activities continue to be an essential component of career guidance throughout the high school years. Students are more certain of their rejected vocational interests than of their accepted vocational interests (Houshey, 1973). Career guidance activities at the high school level help the student through the self-identity crises by assisting him in clarifying his vocational preference.

Chapter IV

CAREER GUIDANCE AS A PART OF CAREER EDUCATION

Introduction

Career education has historically been of latent concern in American education. Under different names, such as activity curriculum, core curriculum, organic curriculum, community school, etc., many of the concepts of career education have emerged repeatedly and with increasing frequency on the American educational scene. The theme appeared more than a century ago as an effort to expand secondary education to include children of workers and to expand higher education through land grant legislation for children of farmers and mechanics. It emerged again a half century later as a renewed emphasis on vocational education in the form of federal legislation. It has continued to surface through the influence of educational philosophers, the Educational Policies Commission of the NEA, the American Vocational Association, and through various acts of legislation (Swanson, 1972).

Trends in Career Guidance

Yet, the career development intent did not become a sustained and organized thrust in education until recently, because historically public education has been almost entirely accountable to higher education institutions. Through prescribed courses required for college entrance, through established accrediting commissions, through college administered or college selected entrance examinations, and through reporting of first quarter or first year grades of freshman students by high schools, higher education institutions have virtually dictated both the structure and content of the secondary school curriculum (Lessinger, 1972). American secondary education has too often been designed to prepare youth for

college, although only two in ten children actually complete a baccalaureate degree today (National Advisory Council on Vocational Education, 1972). As reflected in the above-mentioned trends, it appears as though college preparation has become an end in itself without a similar concern for career preparation.

Many believe that those conditions which have led to the recent emergence of career education are of sufficient importance to substantially influence educational practice (Swanson, 1972; Goldhammer, 1972, pp. 1, 2). These conditions include:

1) A personalized search to find meaning in life;
2) An accumulation of research findings concerning individual development;
3) The rising unemployment and under-employment, especially of youth;
4) A general dissatisfaction with present educational outcomes;
5) A body of educational legislation reflecting society's collective intent in this area;
6) The recognition of the school as a socializing agent; and
7) Policy set by the United States Office of Education.

Our society seems to be marked by a general dissatisfaction among individuals because of their inability to find a sense of personal achievement from their educational and work experiences. It has been suggested that a work ethic based on "economic survival" no longer motivates <u>all</u> people. As society changes, the educational establishment comes under increasing pressure to help young people develop purposeful goals and prepare for those goals. As youth have demanded more relevant educational experiences, the emphasis on career education has increased (Coleman, 1972).

Work as a prominent feature in the lives of adults has

long attracted the interest of social and behavioral scientists. During the 1950's, scientists began to direct attention to the study of the elaborate socialization process involved in transforming the child into a working adult. As evidenced by works cited earlier, concerted efforts were made to understand the process by which vocationally relevant behavior is developed and expressed. The 1960's witnessed an interest in empirical research designed to test earlier speculations and assumptions, and to refine and give systematic structure to theory. While the present knowledge provided by research does not apply to every segment of the population, an impressive body of knowledge about vocational development and behavior has accumulated, and provides an empirical base for career education programs.

One of the most significant outcomes of research to date has been to define career development in a broad rather than a narrow sense, as self-development viewed in the context of educational and vocational pursuits. This development is a continuous process which extends from early childhood throughout life. It is a process that is systematically facilitated and influenced through the career education program that begins in kindergarten and elementary school and continues through each succeeding educational level. The elementary level has been recognized as being extremely important because it is at this age that attitudes toward work are formulated.

Educational Response to New Concepts

Efforts to make the educational establishment more responsive to the life-preparation needs of youth, including occupational needs, were a part of the legislative scene of the 1960's. The Vocational Education Act of 1963 emphasized, for the first time, the needs of particular groups of people rather than occupational groupings. The Elementary and Secondary Education Act of 1965, among other things, focused on

disadvantaged and handicapped students. These legislative acts reflected, to a limited extent, a concern for the individual prior to his failure. Both of these efforts attempted to patch up the dichotomy between "general or academic education" and "vocational education."

Through the late 1960's there developed a growing awareness on the part of many educational leaders that, if all students were to acquire the attitudes necessary for managing their lives in our complex socio-economic system, there must emerge an educational pattern designed to integrate theoretical and applied learning. The vocational education amendments of 1968 set into motion activities that encouraged integration of academic and vocational learning for disadvantaged and handicapped students. It further encouraged appropriate learning activities, at all educational levels, designed to facilitate educational and occupational decisions.

During the 1970's, society has become increasingly concerned that many students are not finding experiences in college helpful in moving into meaningful roles in the broader society. Those concerns are reflected in "The Education Amendments of 1972" which placed increased emphasis on integrating learning around the career arenas of life at all levels of education. Through legislation our leaders are making the point that education must include, as one of its primary objectives, the opportunity for youth to discover and to develop competencies necessary to achieve his own life purposes.

Historical Changes in Vocational Development Theory

A growing complexity in the occupational and organizational structure of the world of work, combined with the general isolation of youth from the work-life, has affected the way students are exposed to view the world of work. In the

past, the young person's vocational behavior was shaped largely by the folkways, mores, and beliefs transmitted by the family. Today many parents may feel inadequate in providing the guidance necessary to instill, in the developing child, appropriate work habits and attitudes of decision-making and planning.

The changing nature of the process of maturing, coupled with increased empirical knowledge of how work attitudes are acquired, has placed an added responsibility on the schools to facilitate the career development of all youth, and to initiate the process when the child enters the formal school setting.

The concept of career education has been brought more directly into the mainstream of educational dialogue through the efforts of the United States Office of Education. Through the use of discretionary funds under the vocational amendments of 1968, the Commissioner of Education has created, in every state, one or more projects that have a career education thrust. These projects have encouraged states and local systems to initiate selected aspects of a career education program. In addition, the Commissioner of Education has authorized the use of approximately $10 million in "Special Projects" funds for the purposes of demonstrating the viability of career education programs and practices. Associate Commissioner, Kenneth B. Hoyt, has made these funds available to states, local school districts, colleges and universities during the past two years (1974-1976) in the form of "Special Projects Grants."

Current Influences on Career Education

Career education has been presented as having the potential for making education more relevant, more student-centered, more human and more effective for increasing numbers of students (Marland, 1972). It purports to enable each individual

to formulate values by which he will judge his own personal worth. Whether career education can achieve all that has been advocated, remains to be seen. Certainly this concept is in keeping with individual and societal needs as they are currently stated. The impact of career education in the content and in the processes of education will be determined by the quality of the programs conceived and implemented.

The predominant factor in current career education programs seems to be the background of the individual or the individuals providing the leadership. The leadership for career education at the local level has tended to come from individuals with one of three orientations: General or academic education; Vocational education; or Guidance. An examination of the major characteristics of current in-school career education programs according to their leadership origin, provides a rationale for merging the three separate trends into a single, comprehensive program.

Academic Orientation to Career Education

The general education activities in career education emphasize the examination of work content as a means of encouraging students to acquire academic skills. Career development objectives stress the learning of characteristics, requirements, and growth potential of different occupations.

Some limitations of the general education approach may be as follows: Career education remains subject-matter-oriented. The emphasis is on how to pour into students the information and skills of a particular discipline. Learning activities remain intellectually-oriented, and provide students with little opportunity for experiences other than traditional homework assignments. The purpose of education remains that of preparing the student for more education rather than that of developing his skills and of clarifying

his self-identity in terms of society and his environment beyond the classroom.

Vocational Orientation to Career Education

Vocational education activities can be described as a combination of early-1900 vocational guidance activities and the addition of learning-by-doing activities at each educational level. Career development objectives include job skill preparation, the acquisition of information about self, educational options, occupational alternatives, and knowledge about employer expectations. The approach is oriented to exposing students to the occupational clusters identified by the United States Office of Education. At grades 1 through 8 a refocusing of language arts, math, science and social science includes career-oriented activities and information regarding each occupational cluster.

In grades 9 through 12, essential competencies in math, science, language arts, and social studies that relate to each occupational cluster are identified. The subject matter area is refocused around an occupational theme, and the curriculum is designed to move progressively from the exploratory to a preparatory focus for work entry. The content of vocational/career education activities is based upon selected needs of the work world. An integration of academic and vocational knowledge occurs within the parameters of traditional subject matter areas. The vocational activities emphasize action-oriented learning activities at each educational level. Students are allowed to observe and to participate in typical career-oriented activities through either simulated or actual situations. Abstract knowledge is assumed to take on new meaning when applied to solving real life problems. These activities make the vocational teacher a career resource consultant to other teachers in developing relevant work-related

learning activities in which basic educational skills could be applied.*

The vocational education approach has several limitations. One is its general de-emphasis on the affective nature of the student in clarifying his own attitudes, feelings, and motives as they relate to environmental experiences. There is a tendency to minimize personal factors and to build more on the external factors of job skills and occupational facts.

Exploration should not be limited to just experiencing a work activity or a work environment, but must include assistance in examining the experience in terms of clarifying or modifying the career-self-concept. The emphasis of the vocational education approach is more on an informed choice alone rather than on an informed and considered choice. Another limitation in this author's opinion is that of encouraging the student to pursue a single occupational choice, rather than helping him to develop decision-making and planning skills necessary for making continued choices throughout his career. The vocational education approach becomes concentrated at the upper junior high and secondary levels.

Guidance Orientation to Career Education

The guidance approach to career education is a combination of a curriculum- and counselor-based effort with considerable emphasis being given to affective learning. Objectives for this approach tend to center around career-self-concept development, career decision-making and planning, interpersonal relations, and psychological preparation for work. The

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*This summary of "vocational orientation to career education" is based on the author's understanding of the career education model presented by the U. S. Office of Education.

overriding emphasis is on the student making a considered choice from an internal frame of reference.

Implementation of this approach normally involves integrating career-oriented content and activities into one or more of the academic curriculum areas. In addition, there is active involvement of the counselor in conducting group guidance and counseling with students in terms of self/career development.

In this approach the student becomes a major source of the content. One underlying assumption is that the normal process of growing up provides youth with experiences which may be of assistance in the formulation of an adequate career-self-concept. The guidance approach usually relies heavily on an occupational information system involving publications, audio-visual, and information retrieval systems. Other major learning activities include role-playing, career simulation games, field trips, group and individual counseling. Considerable emphasis is directed to enabling the student to state his motives and desires in relation to career-oriented experiences.

In working with teachers, counselors have served as resource consultants and coordinators for including career-oriented activities in the curriculum.

The guidance approach has several limitations, the most severe being a lack of content. Exploration of career data seems to have been cognitive-based rather than "doing"-based. Students often are not provided with real experiences that enable them to test their values and self-concept in the larger community and world of work. In many instances the occupational information system becomes the career education program rather than one of several resources used as a part of the overall design. Acquisition of job and preparation

skills are usually given secondary emphasis. Further, the guidance approach depends upon specialized guidance personnel. Because such personnel are in short supply, the guidance approach has not been adopted widely at the elementary school level.

Government Influence

The United States Department of Education, under the influence of Sydney P. Marland and more recently by Kenneth B. Hoyt, focused much attention on career education and the problems inherent in providing sound career guidance. Marland (1972) has criticized American educators for supporting a general education curriculum that offers its students no direction in terms of career preparation and planning. He has taken a positive stand on the matter of career education and has elaborated on a United States Office of Education plan that would ultimately have every student headed for a career goal.

In support of career education efforts Marland (1972) offers the following statistics:

> Only two tenths of high school students receive occupational training; three tenths of high school students go on to college, although nearly one third of this number drop out.

According to Marland's estimates, one half of all high school students, or 1,500,000, ought to have opportunities, counseling, and attractive options in occupational training. To further support this concept, Marland points out that the U.S. Department of Labor estimates that eighty percent of the nation's jobs during this decade will be handled by employees with less than a baccalaureate degree.

The emphasis on career education and guidance extends beyond the commissioner's office to the states and is just

beginning to take hold at the local level. The National Association of State Directors of Vocational Education (1972) have stated their position on career education. It is the opinion of this group that nothing in education today is more pertinent than providing every youth with the capability to make intelligent career decisions.

Summary

Swanson (1972) in discussing career education and the barriers to implementation, stressed the fact that career education embraces the concept of decision-making, including the inductive and deductive process of choice. The fact that students should be encouraged to explore careers in sufficient depth to permit rejection as well as acceptance of alternative futures causes some problems in the minds of some educational administrators. To allow this kind of in-depth process of decision-making to occur requires a commitment of time, effort, and programming on the part of the school administration. Career information dissemination systems can be viewed as one of the instruments of educational and career progress.

Career Education Theory

The emergence of career education theory is related to the fact that career psychology is now readily distinguishable from vocational psychology. Career psychology places emphasis on the individual and his progression through stages of preparation and performance of occupational roles whereas vocational psychology places emphasis on the individual meeting the requirements of a specific job. Contemporary vocational psychology focuses largely on concerning, clarifying and revising and restating the principles, usually deduced from developmental and self-psychology, which governs the

course and stages of career decision-making and patterning from early adolescence to adulthood (Super, et al., 1969). Career education theory consists essentially of merging career and educational development theory. The career education concept is an assertion that education be considered a part of the overall career development process.

Cognitive, affective, and psychomotor development theories, along with related theories of social and human development, become the educational ingredients for the concept of career education. One of the most significant contributions of recent curriculum theory is the emphasis on development of the student's competence in using conceptual schemes and methods of inquiry. This enables the individual to gain increasing independence from the educational setting and continue to learn throughout his lifetime.

John Ottina, former acting U.S. Commissioner of Education (1973), delineated two basic purposes of career education: to inform the student of the wide range of careers and to help the student explore his own talents and ambitions so he can prepare himself for a career that will bring him both occupational success and security and personal fulfillment. Mr. Ottina may have overemphasized the information purpose of career education thereby leaving out the essential component in career education -- the formulation of an adequate career-self-concept. Some educators feel that if a student is exposed to the available information on a career area he or she will automatically arrive at a career decision. If a student is exposed to the available information on a career, it does not automatically follow that the student will be able to decide which of the alternatives is the most beneficial (Schroeder, 1973). There is, then, a need for an integration of career guidance concepts and vocational development theory within the larger framework of career education.

Suggested Changes

Guidance-based career education programming can be implemented by focusing revitalization efforts on curriculum development, resource and information systems, and the professional role of the counselor (Smith, 1973). The underlying hypothesis supporting Smith's viewpoint is that all individuals should be involved in experiences that will help them to pursue their own interests, evaluate their own abilities, and come to decisions about their lives. The methods used to accomplish a curriculum based career guidance effort are many. Students may receive orientation to the world of work with the help of a career counselor, through discussion of basic concepts about work. Career clusters or job families may provide a framework for introducing career concepts into the curriculum. A matching of skills required in certain occupations with subject matter content may also provide a medium. Central to the efforts of curriculum-based career guidance programming is the need to foster self-identity among students.

Substantial changes have taken place in the theory and research underlying career guidance. These changes place career guidance within a career development framework which then can be translated into action through career education programming. Five major changes have been summarized by Gysbers and Moore (1971) as follows:

> The single-occupational-choice-at-a-point-in-time focus of the early practitioners of vocational guidance has given way to a broader, more comprehensive view of the individual and his career development over the life span. The trait-and-factor approach to vocational guidance has been placed in proper perspective. No longer is it seen as the total and only approach to vocational guidance. Now it is understood and appreciated as one methodology which has a part, but only a part, to play in promoting and enhancing career development.
>
> The specific age focus of traditional vocational

guidance--the notion that an occupational choice is made once and for all during middle or late adolescence--is not valid. We now understand, as Super and Bachrach (1957) have pointed out, that this aspect of development is "a process which takes place over a period of time, and which is best explained by a combination of determinants which themselves interact, are modified, and thus develop with time." This process is called career development.

Since career development occurs over the life span, educational personnel at all levels (kindergarten--adult) have a part to play in stimulating and enhancing this aspect of total human development. No longer can we restrict our activities to the ninth grade and when these activities are completed say our responsibilities are over. Elementary, secondary, post-secondary and higher education personnel must understand that effective programs of career guidance begin in the elementary school and continue through the adult years. When viewed in this manner, career guidance is in the mainstream of education and is not simply a collection of ancillary services.

People at work are no longer seen only as objects through which occupations are analyzed and classified. Rather, we now understand that a work setting can be used as a medium to help people better understand themselves.

Vocational guidance, once understood as a somewhat simple process of matching people to jobs is now understood in the context of the complex process known as career development. We realize that in the past we have underestimated the resources needed to effectively develop and manage programs of career guidance to enhance and promote career development. We now realize it must be treated as a major educational goal.

While occupational choice and career decision-making are important concerns of career guidance personnel, they should not be viewed as separate from other life settings, roles, and events in the total spectrum of an individual's experiences. When viewed from a broader perspective, the process of occupational choice is better understood and facilitated.

Increasing emphasis is being given to self development in relationship to occupational choice as well as to the many other types of choices in an individual's life (Gysbers, 1972). Career guidance is increasingly being seen as an integral and essential component of career education.

The Need for Career Guidance

A study of publicly sponsored occupational programs in 20 U. S. cities found no vocational guidance in 48 percent of the secondary schools (Davenport, 1972). The study, conducted by the National Advisory Council on Vocational Education, also points out that most school counselors are academically oriented and interested mainly in guiding academically able students toward college. Academic counseling is considered to be one valid function of school guidance, but perhaps it should not be the exclusive concern of school counselors. Most secondary students do not go on to four year colleges (Marland, 1972) and should, therefore, receive some kind of career guidance.

The guidance profession alone may not be responsible for the lack of career guidance. Other groups mentioned as responsible include school administrators who downgrade the need for professional counseling; parents who pressure their children into pursuing a college education; educational institutions lacking professional training in career counseling; the business community that fails to provide schools with information on work opportunities; and other groups that fail to fill the information gap needed by the counseling profession. The fact that "most counselors know very little about the world of work outside of education" (National Advisory Council on Vocational Education, 1972) is not surprising, given the conditions noted above.

Summary

Most vocational theories now seem to agree that vocational

choice is a developmental process and that personality factors both affect and are affected by vocational or career processes. Vocational choice is said to be the translation of self-concept into occupational terms (Super, 1963). It is also true, however, that the reality of the rapidly changing environment as it affects the individual and the occupational world is not adequately dealt with in most vocational theory (Hoffman and Rollin, 1972). Future shock, the dizzying dis-orientation brought on by the premature arrival of the future, is nowhere more apparent than in the rapidly changing world of careers. Toffler (1970), in discussing the concept of speed of transience, provides evidence of the "temporariness" in the world of work. Toffler's message, that transience, discontinuity, and novelty are affecting the decision-making processes, has implications for the future of career guidance. Counselors will need new knowledge, resources and tools in order to provide career guidance in a rapidly changing work world.

Results of the National Project Talent indicate that the majority of students do not make appropriate career choices while in high school (Morris, 1969). Project Talent results show that high school students' career plans are out of line with available jobs, student abilities, and/or student interests. Although there has been some improvement in the appropriations of students' career decision-making (Flanagan, 1973), the fact remains that most students today do not possess adequate knowledge and decision-making skills to make realistic career choices.

Not only are students' career plans unrealistic, they are constantly changing. They tend to change more in early secondary grades and these plans are influenced by the educational opportunities available in their community (Beigh and Shaffer, 1972). Students need occupational information and exploratory experiences throughout their school years if

they are to develop and solidify their career plans. Concerted efforts, including computerized guidance systems, (should) be made to get more accurate, timely data to students and counselors regarding careers and training opportunities (National Advisory Council on Vocational Education, 1972).

Perrone (1968), through a national survey of principals, librarians, vocational teachers and counselors discovered that, although 58 percent of all high school graduates enter work or work training after high school, the occupational information available to this group is poor in comparison to college information. For the most part schools rely heavily on printed information, such as that available in the Occupational Outlook Handbook, to meet the needs of the non-college bound student. As a result of this survey, Perrone recommended the development of multi-media approaches to information dissemination; the development of career information centers; and, the use of a job cluster approach to presenting career information. A later study by Hartzler (1969) tested a method for securing occupational information and occupational aspirations using a questionnaire approach. His findings confirmed the fact that more occupational information and more vocational counseling is needed by students in making career choices. An ongoing assessment of student career aspirations is an essential component of a comprehensive career guidance program.

The National Advisory Council on Vocational Education conclude their report entitled Counseling and Guidance: A Call for Change with the following statement:

> Our glory, as a nation, has been the multiplication of choice, but it will become our shame if we fail to help our people cope with choice. Counseling and guidance is imperfect, but it is our best device. It deserves the support and backing of our entire society.

The state of the art in career counseling has not progressed much over the years as evidenced by the following remarks:

> We must learn something about occupations. There is many a counselor and teacher of occupations who knows less about the subject than do some of his students. (Hoppack, 1932) This is still true. (Hoppack, 1972)

Chapter V

THE ROLE OF INFORMATION IN CAREER GUIDANCE

Introduction

In spite of increased availability of advanced methods and technology, most secondary schools continue to use traditional methods of career information dissemination. Career planning is often limited to students browsing through occupational pamphlets and books (Johnson, 1972). Morrill and Forrest (1970) criticize vocational counseling for not preparing students for the changing environment. The volume of information and the rate at which career information is subject to change suggests new methods of career information dissemination are needed in our schools.

The theories of career development presented in this chapter suggest new approaches to the career guidance practitioner. One of the emphases which these theories make is that "information is a sine qua non of vocational exploration and decision-making" (Harris, 1972). It has been clearly stated (Hoyt, 1972) that providing information is not equivalent to providing choice itself. Career information must be assimilated and internalized before good decision-making will occur.

> The wisdom of the career choice decision is to be found in the ways in which the individual is able to gather accurate data . . . , the ways in which he is able to combine such data with his own personal value system . . . , and how skillful he is in constructing meaningful relationships between answers which lead him toward a reasonable career choice. (Hoyt, 1972)

Similarly, Clarke, Gelatt, and Levine (1965) have proposed a paradigm for career guidance practice which highlights the relationship of information to career decision-making:

> The possession of relevant information is a necessary condition for good educational-vocational-decision-making. Although the use of relevant information by no means guarantees the 'right' decision, 'good' decision-making cannot occur without it. The greater the degree of relevant information possessed by the student, the greater will be his potential for engaging in 'good' decision-making. The information important to a broad range of educational-vocational decisions can be reduced to a few basic classes.

They (Clarke, Gelatt, and Levine, 1965) further propose that all information which is given to students in regard to career choices should include: a comprehensive list of possible alternative actions; the possible outcomes of the various actions; the relationships between outcomes and actions; and, a way to arrive at relative preferences. They assume that this kind of information will lead to more effective decision-making.

Decision-Making Models

Bross (1953) also proposed a decision-making model which emphasizes the importance of information in the decision-making process. He outlines a process in which data on hand about the decision to be reached as well as data about similar experiences in the past are analyzed by the individual's "Predicting System." The Predicting System assigns probabilities to outcomes, while the individual's "Value System" attaches a degree of desirability to each probable outcome. According to this model, the process allows the individual to formulate a "Decision Criterion," which, in turn, precipitates a decision for action.

Other more sophisticated models have been put forth and discussed in greater detail (Churchman, 1961; Raiffa, 1968; Page, 1972). These models stress the importance of data in the decision-making process. They call for more quantifiable

data on income, prestige, rankings, personality profiles, and individual values, as essential pieces of information to be used in the decision-making process. This emphasis upon the importance of data for the making of decisions has prompted guidance professionals to seek new tools for career exploration and decision-making.

Occupational Information Dissemination Methods

There are several methods used by schools to disseminate career information. The traditional approach of providing printed and verbal information about the world of work is still the most common method employed by school guidance personnel. The classroom is being used more widely today to present career information to groups and often takes the form of a course on careers. Career days are undertaken less frequently today. There is increased use of career information systems. The latest techniques in presenting career information include microfilm storage and computerized storage and retrieval systems. A brief description of the current methods of disseminating career information with reference to some studies on their effectiveness follows.

Counselor-Centered Methods

The traditional method of career counseling is best described as "counselor centered." The student reviews printed material and discusses this information with the counselor. The counselor assists the student in the decision-making process as he relates the student's achievement and potential to career information. Research on the effectiveness of traditional, counselor-centered career guidance as it compares to other methods of presenting career information will be cited in subsequent review.

Group Techniques

There has been a trend in the counseling field toward increased use of group techniques both to present information and to solve problems. Plotkin (1966) found that when occupational information was presented in a systematic manner in group situations, the vocational interest patterns of the students were positively affected. He found a positive significant difference between his experimental (group presentation) and his control (traditional) groups.

Use of Media

Other techniques and tools employed in presenting career information to groups of students include films, filmloops, career problem-solving kits, and video tape recordings. Krumboltz (1967) found that "career kits" consistently produced more interest and more occupational information seeking. Bancroft (1966), in evaluating the effectiveness of video tape recording as a means of presenting career information, found that high school students responded favorably to the VTR method. He found this method to be particularly beneficial when working with disadvantaged students.

Comparison of Methods of Disseminating Occupational Information

In a study which compared the impact of two occupational information methods on rural ninth grade students' knowledge of the world of work, Jepsen (1972) found that the use of video tape recordings had additional impact over the more traditional use of printed information under certain circumstances. Although no significant differences appeared as a result of the information method alone, there were differences in the effect either method had on female subjects. There was also a noticeable trend toward greater increases in the number of occupations considered as possible future

choices for the experimental group. Both boys and girls who viewed videotaped field trips reported more accurate images of the occupations studied more frequently than did a comparable group using printed matter alone. Other researchers (Bancroft, 1966; Drier, 1968; Peterson, 1967) have reported favorable results using videotape recordings in disseminating career information.

Students need realistic and accurate information about a wide variety of occupations so they may develop realistic work-role expectations (Hayes, 1967). Schmieding and Jensen (1968), in assessing the effects of an eight week occupations class on the vocational maturity of American Indian students, found no significant differences between the experimental and control groups. Using a post-test only design, they concluded that "short-term treatment" has a limited influence on firmly established impressions and attitudes (Schmieding and Jensen, 1968).

Considerable investigation of the effectiveness of various occupational information systems has been undertaken. These studies tend to be highly descriptive in nature. Very little has been done in comparing several systems under the same experimental conditions. As Crites (1969) points out, we have a fairly comprehensive conceptual framework of the stages through which an individual passes in arriving at a choice, but only a few of the objective details are filled in. "The most striking conclusion which emerges from this review of theory is that theory has far outstripped research." (Crites, 1969)

A review of literature concerning two methods of disseminating occupational information follows. The two methods are computerized guidance systems and microfilm-storage systems.

Computerized Vocational Guidance Systems

The effect of technological change on jobs and the high rate of high school and college dropouts have added to the problem of career guidance. All possible improvements in career guidance practices must be considered. Computers represent one of several major innovations being implemented and field-tested.

Computers are used in career guidance in several ways, including: routine information handling; replacing current counselor functions, i.e., information dissemination, with machine operations; and, field-testing of experimental systems for computer assisted career guidance. System users differ in their statements concerning computer uses. Hallworth (1970) considers the main object of the system as one of promoting decision-making ability by making information available to students, and by providing the student an opportunity for vicarious experiences in making occupational choices. Harris (1969) similarly reports the uses of the computer to be: occupational exploration with feedback on student records; decision-making experience; and, data-giving functions.

Every major computerized guidance service has its own rationale. These rationales are somewhat contradictory and share consensus only on the most general levels, such as that there is a great need for such systems and that students should benefit directly from them. Cooley (1964) points out the lack of needed knowledge of facts and principles needed to teach students about career decision-making. He suggests this kind of knowledge and skill can be made available through computer use. Harris (1968) sees the computer as a valuable tool for organizing, updating, and retrieving career information. She also emphasizes the ability of the computer to expand options and alternatives from which students can make choices. Gallagher (1969) points out that school guidance

counselors can no longer cope adequately with the available information, nor can they help all students to see the complex range of alternative life styles.

Roberts (1968) has developed a rationale for use of computers in guidance based on the quality of the computer as a medium of communication, whereas Harris (1972) bases her rationale for computer use in guidance on the kind of potential which computers have to facilitate many of the tasks essential to the carrying out of guidance programs.

Computer capabilities and uses in guidance have been described by several authors. Minor (1968) emphasized that better use of counselor time for higher level problem solving with the aid of effective access to vocational information via computer. Impellitteri (1967) lists the advantages of flexibility in storage and updating of occupational information.

The most obvious potential of the computer is the capability to store and instantaneously retrieve vast amounts of data. A number of other computer capabilities are listed by Harris (1972):

> . . . the ability, because of the design of its program, to bring together and interrelate numerous and distinct bits of information.
>
> A third computer potential of value to the guidance profession is the ability to simulate a conversation.
>
> A fourth computer function worthy of note is the ability, again due to the design of the software, to perform an infinite number of alternate tasks or conversations with one student or simultaneously with many.
>
> Some guidance designers, Tiedeman (Super, et al., 1970) in particular, see yet another impelling capability which can be harnessed for guidance use in the computer's ability to serve as a prosthetic device for decision making.

Katz (1969) shares Tiedeman's view of the computer as an aid in decision-making, although his emphasis lies with the computer as a tool to understand one's personal value system.

Claims that computers and related technology have had a major impact on counseling during the last five years (Loughary and Tondow, 1969) are based upon a few counselors having nearly continual experimentation with advancing computer technology, and not upon any universality of computer applications to counselor problems. The average public school guidance counselor continues to function in the traditional paper-shuffling manner.

Computerized Systems

Below are presented, in alphabetical order, short descriptions of eight of the most prominent computerized guidance efforts to date.

1. (CACIS) Computer Assisted Career Information System. - Asbury Park, New Jersey (Kenneth Benus)

The Computer Assisted Career Information System will be part of a Career Education Department and fully integrated with the continuing efforts of Asbury Park's Career Resource Center. This system's primary objectives are to generate student interest in career planning and to improve the realism of student career decisions.

The Computer Assisted Career Information System affords the Career Education program the capabilities of developing, analyzing, synthesizing and retrieving data necessary for: the research and development of labor manpower forecasts; analysis and scoring of Career Education assessment instruments; community resources programs; full and part-time job placement; follow-up of all exiting students; a data bank on each student for occupational information, career counseling

and educational counseling; and a record of business and industry resources.

2. (CAOG) Computer Assisted Occupational Guidance Program - Pennsylvania State University (Joseph T. Impellitteri)

Objectives - To provide an easily updated individualized occupational information system; to develop a process whereby youth could develop their own individualized frameworks of the occupational structure; and to provide an experience for youth to acquire, by simulated practice, operational strategies in relating their abilities and interests to occupational opportunities.

3. (CVIS) Computerized Vocational Information System - Willowbrook High School, Villa Park, Illinois (JoAnn Harris and James Godshalk)

Objectives - To present to students an organized computer system for vocational decision-making and to make information about occupations and students more available to counselors; and to allow students to explore occupations in relation to their own abilities, achievements, and interests. CVIS is probably the best-known of the existing systems.

4. (ECES) Educational and Career Exploration System - IBM, Advanced Systems Development Division (Frank J. Minor, Roger A. Myers, Donald A. Super and others)

Objectives - The objectives were to design an experimental computer-based learning environment which might be used as part of the educational and vocational guidance services in schools. The system would be designed to benefit both the student and the counselor. ECES is apparently not commercially available, and IBM seems to have switched to promoting CVIS, which may easily be run on IBM equipment.

5. (GCSS) Guidance Counseling Support System - IBM, Advanced Systems Development Division, SRA (Frank J. Minor, Donald G. Super, Roger A. Myers, David V. Tiedeman, Guy Pilato, King Gillen, Ted Friel)

Objectives - The objective of the project is to design a computer-based learning environment to be used as part of vocational guidance services found in educational institutions. The system would be used by the student in a conversational and interactive mode. CGSS apparently was a prototype version of ECES.

6. (ISVD) Information System for Vocational Decisions - Harvard University, Cambridge, Massachusetts (David V. Tiedeman, Michael Wilson, Robert P. O'Hara, Edward Landy, Wallace J. Fletcher, Allan B. Ellis)

Objectives - The major objective of this project was to improve vocational decision-making through the use of a computer-based training program. The program was so designed that the student could relate knowledge about himself to data about education, training, and work, and could thereby create information on which he can base career decisions. The entire program linked person, computer, and teacher or counselor in such a way that the student conducted a dialogue with the computer, and the counselor assisted in interpreting and evaluating the decision-making process. The ISVD has become extinct.

7. (TGISS) Total Guidance Information Support System - Bartlesville Public Schools, Bartlesville, Oklahoma; Research Foundation, Oklahoma State University (Tommy L. Roberts and Ed Forsberg)

Objectives - To plan, develop, implement, and appraise a prototype computer-support system specifically designed to facilitate the counselor function in the student decision-making process through the application of information retrieval, gaming, diagnostic, and conversational techniques; to develop a general theoretical framework to undergrid a counselor-computer interactive information support system; to determine system specifications in terms of input and output requirements of users; to determine hardware configuration; to design and write system programs; and to train users of the system.

8. (GIS) Time Share - Guidance Information System.

Guidance Information System (GIS), a product of Time Share Corporation and the Houghton-Mifflin Company, is a computerized data retrieval system which provides students and counselors with access to information about occupations, two and four-year colleges, and financial aid. The Guidance Information System evolved from concepts and experiences developed in a project conducted at Harvard University under the sponsorship of the U. S. Office of Education. This project (ISVD) was a three-year effort initiated in June, 1966 by Dr. David Tiedeman, Professor of Education at Harvard. Several staff members associated with ISVD initiated an independent effort to develop and implement an inexpensive information storage and retrieval resource for schools, resulting in the introduction of the Guidance Information System.

The Guidance Information System allows students to explore large data files and to examine the ways in which their personal criteria for selecting colleges and occupations affects the range of opportunities available to them. The information students obtain allows them not only to see the results of choices they have made, but also to make comparisons with the results of other choices.

Summary

Computer-assisted guidance systems provide some possibilities as well as some challenges to existing guidance programs. Though guidance services are rarely evaluated through controlled observations, computer-assisted guidance programs are undergoing careful scrutiny regarding the effects of their use.

Evaluation of Computerized Guidance Systems

Loughary, Friesen, and Hurst (1966) and Thompson, Lindeman,

Clack, and Bohn (1970) provide two examples of recent evaluation efforts. Loughary and his associates discovered that counselor-generated plans were more lasting than computer-generated plans. Pilato (1968), in a study of the ECES project, found that students exposed to that system improved in the appropriateness of their vocational preferences and the accuracy of their self-knowledge.

As pointed out by Minor (1970), the flexibility and usefulness of the computerized system is largely dependent on the students' immediate needs and his judged level of vocational maturity. The Educational and Career Exploration System, ECES, on which Minor reports, was investigated by Martin Bohn and Donald Super (1969). Using a scale devised by Super to measure vocational maturity, the authors found that after three months of ECES experience the vocational maturity scores of the experimental students were not raised significantly. Scores on one of the sub-scales, Amount of Decision-Making Information (D11), were raised significantly, however.

In a recent research study, Harris (1972) concluded that the CVIS computerized guidance system did not increase the number of occupations students view as personal options. She did find, however, that CVIS does increase the accuracy and range of information students possess concerning their chosen occupations. She further concluded that CVIS does significantly increase the vocational maturity, i.e., the awareness of the need for career planning and the knowledge of resources for exploration of students. The author in his dissertation research study with Hartford High School students found results similar to those of Dr. Harris (English, 1974).

A review of current literature regarding computer-based guidance systems points out several areas of agreement. All systems investigated reported enthusiastic student endorsement and interest. There is also evidence that with both ECES

and CACE that use of the computer system stimulates an increase in exploratory behavior, such as in use of the school's vocational library and conferences with counselors. Computer systems have also enjoyed enthusiastic support from parents (Harris, 1972). Both the ECES and the CVIS projects report favorable parent reaction.

Computerized guidance systems have demonstrated their potential in the career guidance field. Students, counselors, system designers all claim great benefits from their use, however, hard data concerning their effectiveness is lacking. Very little research has been conducted regarding the effectiveness of computerized guidance systems. This fact is even more true with regard to other career information systems. Virtually no studies have been conducted which compare the effectiveness of more than one system on the same population.

The Use of Microfilm in the Dissemination of Career Information

From its inception in 1965, the concept of utilizing microfilm for vocational information on an individual occupational basis has met with rapid, widespread acceptance. At the present time well over half of the states have initiated or are in the process of establishing VIEW-like programs. VIEW is an acronym meaning Vocational Information for Education and Work. The basic VIEW occupational information system utilizes a microfilm aperture card approach. Each aperture card contains four pages of information in a particular occupation localized to a specific region in the state. The student reads the information on the aperture card on a reader-printer. If the student wishes to make copies of this material, he may do so with the print-out capability of the machine.

History of Microfilm Techniques

The origins of both microfilming techniques and the

forerunner of card-punch equipment came from France. Haga (1965) reports that the card-punch concept was first employed in the operation of weaving equipment in 1839 and was known as the Jacquard method. It is also noteworthy that the word microfiche, literally translated micro card, is a photographic technique also developed in France. Aperture cards, a combination of the punch-card and microfiche, are used in the VIEW program to store and retrieve occupational information. (See Appendix B).

While not related only to vocational information, Lee G. Burchinal, Deputy Director of the Division of Educational Research, ERIC, and Harold A. Haswell (1965), Director of ERIC, have written about the development of the Educational Research Information Center (ERIC) which would not exist without the compactness and versatility of microfilm technology.

Similarly, the original Project VIEW developed by Hoover and Whitfield (1966) in San Diego, and reported by Gerstein and Hoover (1967), could not have existed prior to the development of modern techniques.

Several studies have been conducted to determine the effectiveness of this type of occupational information dissemination. The majority of these studies have supported this type of information system.

A recent study by Davis, et al. (1973) concludes the following regarding VIEW:

> The VIEW materials were used 3,046 times during the approximate 16 weeks of this study. Well over half of the times the materials were used, one or more print-outs were made. There were 4,303 print-outs made during the period under study and it is assumed that these print-outs were discussed with someone. This is an average of 1.413 print-outs per student. Approximately 60 percent of the time the students indicated they planned to discuss the material with

their parents, while less than 20 percent indicated they planned to discuss the material with their teachers or counselors.

Approximately 90 percent of the students studied indicated a positive attitude toward VIEW. There was ample evidence to indicate increased utilization of the material the longer it remained available. Approximately 30 percent of the students using VIEW indicated that their educational plans had changed or that they had changed their minds about their future career as a result of VIEW. Over 90 percent of the professional staff indicated a favorable reaction by the students. Approximately 30 percent of the professional staff had observed instances where VIEW had affected the career decision-making process of students.

This study (Davis, 1973) indicates that VIEW is a relevant and viable form of occupational information in the schools studied.

Davis, et al. (1973) conclude further that:

The introduction of VIEW into the schools as another means of occupational information had a significant affect on the ratings of occupational information available to the students. As indicated by the data presented herein, the majority of the students felt that VIEW was better than other sources of occupational information available to them and they felt it was helpful in making them more knowledgeable about occupations in their communities.

The introduction of VIEW did not have a significant effect on the person influencing the future plans of the students. This was indicated by the data presented throughout this report which indicates that approximately 60 percent of all the students relied heavily on their parents concerning career decisions. One important phenomenon observed was the fact that those students above the eighth grade seemed to rely more on their counselors and teachers.

The fact that 41 percent of those students making print-outs from the VIEW cards indicated they discussed these with their parents and that 85 percent of the parents were impressed would indicate that VIEW is a very valuable tool to be used in schools.

Evaluation of VIEW Systems

In-depth studies concerning the use and effectiveness of VIEW have been conducted in various states. Hoover (1967) reported that VIEW increased the effectiveness of school vocational guidance services because the material is easy to read, current, and well organized. He further stated that VIEW saves counselor time and attracts students. Hoover also pointed out that the San Diego VIEW system produced favorable student reaction and increased inter-staff participation.

Whitfield (1968) in a controlled study of several groups of VIEW users, concluded that providing good information does not assure effective use of such information. On the positive side, his study pointed out that the system is well liked by students and that parents reacted favorably to their inclusion in the process.

A similar type of investigation conducted by the Stanislaus County Department of Education (1968) concluded the following:

1. VIEW is an easy to use set of reference materials.
2. Students who use VIEW know more about job opportunities than non-users.
3. Students would use VIEW again if it was made available to them.
4. VIEW was rated favorably for accuracy by employers and school personnel.

In addition to its value as an information source, VIEW encourages student users to explore their occupational interests further. In an investigation of VIEW materials' use in Rochester, New York, Youst (1970) found that 40 percent of the students stated that after using VIEW they engaged in some additional exploratory activity.

A similar, but more exhaustive study of VIEW use was conducted by Cameron (1972). A VIEW-like project called

INFOE (Information Needed for Occupational Entry) was investigated. Questionnaires were administered to a randomly selected group of students before and after using INFOE materials. Counselors' reactions were also queried. The results based on sixty schools' responses showed that 43 percent of the users felt the materials helped them choose a vocational course. The majority of student users also felt that the materials would help them choose a career. Thus there is some evidence that VIEW materials aid in the career decision-making process.

A controlled research study by Smith (1968) concludes that VIEW is a more effective method of disseminating occupational information than traditional counselor-centered methods. Smith found that students in schools using Project VIEW equipment and materials learned more about the world of work than students using traditional methods and materials. He also found that students in schools using Project VIEW equipment and materials learned more about the world of work than students using traditional methods but up to date materials from Project VIEW. Other conclusions of significance include the following:

1. The data reflected a high positive correlation between the parent(s) level of education and the score that the student makes.
2. The data reflected a high positive correlation between the parent(s) vocation and the score the student makes.
3. A high percent of those in this study indicated that they were going to college, and at the same time indicated a non-baccalaureate vocation for their future.
4. . . . the obvious conclusion is therefore that Project VIEW was of tremendous personal use to certain select individuals. (Smith, 1968).

Summary

Youth are confronted with change at an increasingly rapid

rate; change in the nature of occupations, in skill levels required for job entry, and changes in work values. Counselors often inform them that, on the average, they may expect to change occupations somewhere between five and seven times, yet little is done to provide the tools needed to deal effectively with change. A society with an increasing rate of change creates problems for its members and should, therefore, accept responsibility for helping individuals solve their problems.

Attempts to develop more useful theories and practices in the field of career guidance have been moving in several directions. Some theorists have been attempting to extend and improve existing theories. Other theory-building has attempted to specify certain aspects of general theories. Gribbons and Lohnes (1968), for example, have been investigating the nature of coping behaviors for becoming more vocationally mature. Super (1968) has been searching for a more adequate method of predicting career patterns, while Werts (1968) and Flanagen and Cooley (1966) have been investigating prediction models for career pattern theory. Numerous other research studies relating to both theory building and career guidance practices have been mentioned briefly in this review. It is this author's belief that career development, as measured by the various indices of vocational maturity, occurs over time and that occupational information contributes to the growth of vocational maturity.

Another effort to improve theories of occupational choice and career development is represented by the work of Flanagen (Project Talent, 1973). This research effort is gathering the largest and most comprehensive pool of data regarding student progress to date. Included in Project Talent's goals is the collection of data relating to factors affecting vocational choice. Such efforts should provide considerable data against which existent and future theory and practices can be evaluated.

The process of selecting, preparing for, and entering the world of work may be viewed in a variety of ways. The various theories discussed in the previous chapters seem to fall into two broad contexts -- choosing an occupation and career development. Further investigation into the area of occupational choice within a career development framework are needed to clarify the process and sharpen the goals and objectives of career guidance. A broadened concept of occupational choice and/or career development can provide an anchor point for the guidance practitioner's daily work.

New and innovative approaches to utilization of media in career guidance are being developed. An approach which combines computer-based career information (GIS) with localized career information (VIEW) and other media devices is described below:

> Guidance Information System II (GIS II) was designed to help counselors overcome the problem of managing and maintaining an up-to-date career information system. The GIS II system is an integrated system with a data base of information on the computer, supported by materials which include microfiche or microfilm, sound film strips, kits, and publications. All of these components are indexed to provide meaningful career exploration and decision-making experiences for students.
>
> GIS II is built on the well-proven and highly successful Guidance Information System. GIS evolved from concepts and experiences developed in a project conducted at Harvard University under the direction of Dr. David V. Tiedeman. The resulting system first became operational in 1969 and over the last five years has been modified, expanded and improved under the direction of Time Share Corporation in cooperation with Houghton Mifflin Company and is now used at approximately 900 high schools, community colleges and career centers.
>
> The Guidance Information System makes it possible for youths to explore large data files stored in a computer and to examine the ways in which their personal criteria for selecting colleges and occupations affects the range of opportunities available to them. Using a terminal in the guidance center, the student or his counselor may type simple instructions requesting the

desired information. The computer responds immediately by typing the appropriate responses from the permanently-stored data files.

By sending such a set of instructions to the computer, the student receives a series of immediate responses; the information the student thus obtains allows him not only to see the results of choices and decisions he has made, but also to compare those results, there and when, with the results of other choices. Further, the comprehensive nature of the data is such that the student will have a greater amount of information available to him in a shorter period of time that he could have by any other means.

The unique aspect of the Guidance Information System is that it makes it possible for the student to interact directly with the information. Because they see the result of each instruction they choose to send to the computer, they can change their mind, and their instructions, at any point. This places the decision-making where it belongs, with the student. The intention has been not to provide matching or placement services, but rather to close the communications gap between the facts and those who need to use those facts for effective decision making.

Two key components of the GIS II system are the computerized occupational data base and localized VIEW materials on microfilm. During the spring of 1973, the author investigated the impact of the GIS and VIEW systems on the vocational maturity of high school students. A random sample of 150 eleventh and twelfth grade students at Hartford Public High School were selected for participation in the study. The Career Development Inventory (Super, 1971) was administered to two experimental groups before and after use of the GIS and VIEW materials. Compared to a control group, users of both the GIS and the VIEW materials gained significantly in two important aspects of vocational maturity, namely "Planning Orientation" and "Information and Decision-Making." The results of this study indicated that use of both the Guidance Information System and Project VIEW materials does significantly affect selected aspects of the vocational maturity of senior high school students. Ample evidence exists, therefore, to support the use of these key components (GIS and VIEW) in a career guidance program.

A Comprehensive Career Guidance Support System

Given the fact that individual components of GIS II have proven their worth, imagine the impact

of a total guidance system containing the following elements, all of which may be used independently with cross-referenced indexes:

(a) Sound film strips portraying over 300 different careers. These films introduce actual workers, showing them performing their jobs and talking with them about their work.

(b) The National College Catalog Service was developed to put all of the nation's four-year colleges on individual microfiche sheets. Thus, over 200,000 pages of information on the country's colleges are immediately accessible. The National College Catalog Service is being expanded to include all of the two-year community colleges and many of the nation's proprietary and vocational schools that offer courses in specific trades.

(c) Working with state agencies, occupational information, as contained in the Vocational Information for Education and Work system, has been placed on accessible microfiche and microfilm which is indexed by the GIS II system. Supplementary occupational materials have been developed on microfiche and microfilm.

(d) Filmstrips on testing programs such as the PSAT, SAT, and ACT have been incorporated as preparation for using the College and Vocational files.

(e) Career Kits which list over 1100 careers on a 5 x 7" format in exploratory form are indexed from the Occupational files.

(f) The new Career Object Boxes which have organized career information uniquely by subject of interest have been integrated into GIS II.

For the guidance or career counselor, a new Career Education Resource computer-based file has been added to GIS II. This file, using key word techniques, allows the counselor to easily refer to work that is being done on other projects in career education, some of which relate to the Career Education, Office of Education, or to the Occupational Information Systems Program at the Manpower Administration Office of the Department of Labor. Other materials cross-indexed include the Guidance Monograph Series, edited by S. C. Stone and Bruce Shertzer, and published by Houghton Mifflin Company. This series of over 50 paper-backed volumes offers information valuable to all administrators and counselors involved in Career Education. In short, for the first time, the guidance counselor has unlimited resources at his or her fingertips and can profit from the work done by others by exchanging ideas and not reinventing the proverbial wheel.

GIS II is supported by a number of published guides. A detailed User Manual gives the guidance and career counselor complete confidence in using the system. Student Study guide, now in its 14th printing, is available to assist the student or youth in effectively using the system and to assist him or her in doing preliminary planning and becoming aware of career and occupational choices. Materials for parents and a booklet on financing a college education are available as well as an extensive line of resource materials for the guidance and career counselor.

Extensive training materials include either a filmstrip or audio 35mm slides which introduce the GIS system and demonstrate how to interact with the system. Sample output and use of the system is fully explained. A film describing GIS is also available for parents, school administrators and other groups. The film is available in 16mm or Super 8. Other training materials are available for the counselors on how to add state and regional information to the system to meet changing requirements.

Conclusions

GIS II is not meant to be the final or the full source of career information, but rather it is a dynamic tool which will increase the value of other resources such as the Occupational Outlook Handbook, the Dictionary of Occupational Titles, college catalogs, and others, by suggesting a direction for further exploration based on the student's needs and interests. Because the computer is playing the role of data disseminator, supported by the wide range of multimedia materials, the counselor is free to play the more important role of data interpretor and to deal with the personal and academic problems of his students. Time freed for the youth and counselor by using GIS II makes it possible for them to engage in discussions at a higher level of meaning regarding the fundamental basis for decision-making about careers and continuing education.

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Additional suggestions concerning career information services can be found in Chapter VIII.

Chapter VI

REVIEW OF MANPOWER FORECASTING TECHNIQUES

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During the past few years I have been particularly impressed by the lack of understanding people have of manpower forecasting, thus one reason for the presence of this chapter. It also serves to prepare the reader for our recommendation of a computer-based career-guidance information system which could be made available to counselors providing career guidance services.

Long-Range Manpower Forecasting Techniques

An essential part of a school system's total educational needs is a good and meaningful data base providing both long-range and short-term manpower needs. Such data must be reasonably precise, available on a geographical labor-market basis, and as detailed as possible regarding specific occupational needs. Many states and local school systems have shown a limited commitment to acquiring and maintaining adequate data on labor market needs. This fact of life imposes a severe limitation on the sources of manpower data that might be aggregated by state agencies for long-run analysis or forecasting. In effect, it is very unlikely that such necessary long-range manpower forecast information will come from surveys conducted on a regular basis. Consequently, long-range information must come from more complex and sophisticated models. These pages briefly review available techniques for the benefit of the reader.

The Partial Approach

This method typifies the most direct approach available by focusing upon individual sectors, industries or occupations.

It represents a last-resort, "worst-state-of-the-art approach." Generally, one proceeds by conducting a survey of the major employers and asking them to project their own labor demands into the future. By making some very convenient assumptions that effectively homogenize the industry, the aggregated results of the survey are then interpreted to be representative of the overall manpower picture for that industry. One can extend the implications of initial and localized results geographically to suggest the national need for manpower for a particular industry or a particular area.

The difficulties encountered with this simple and popular approach are massive. The collection and classification of the data is problematical. Respondent-provided data too, may be little more than a reflection of seasonal or current conditions more than anything else. Even worse, employers might totally disregard their own "forecasts" over time and the ultimate patterns of manpower needs could be quite different from the "planned responses" generated from the original data. Even at the local level, such an approach is hard to defend (Doeringer, et al.).

There are other problems commonly recognized by professional forecasters. Correctly identifying the universe of establishments to include in the survey for different time periods is one. Then, too, as we found or at least suspect, there is the issue of built-in employer biases toward overestimation or underestimation. Authorities on the science of forecasting normally suggest that such an approach is valuable only when limited to short-term, easy-to-identify skill needs (Morton, p. 20).

Another version of "the partial approach" is similar to what urban economists call the "economic base" method. Here, one identifies relationships between the variable in question (say, the number of machinists in the United States) and a

variable which is forecast by rather reliable techniques (say, the GNP). If some ratio between the two exists with a degree of constancy in the immediate past, then one simply argues that if the "independent variable" is assumed to increase by a given percent, then the "dependent variable" will grow by a like amount. Thus a projected increase in the GNP would warrant the prediction that the demand for machinists would expand accordingly. Of course, one can get much more sophisticated by employing a large number of variables in making the forecast and projecting maximum and minimum estimates of demand for a particular occupation or skill. However, these estimates are but "useful"; they are neither adequate nor valid for the forecasting of broad manpower requirements. Each set of variables employed must be limited in number as a matter of practicality and the choice of variable employed can easily be inconsistent in terms of assumptions. In sum, then, "partial analysis" is time-consuming, difficult, inadequate and unreliable for long-range forecasting purposes.

The Planning Approach

Another path to understanding future manpower needs that is attractive to some involves the adoption of economic goals of a broad nature, the determination of the costs of implementing these goals in the future and then analyzing the overall economic and manpower requirements necessary to the achievement of these goals. Such an approach at the least helps in identifying manpower constraints and broader limitations inherent in the adoption of economic goals that exceed the endowment of resources. However, goal identification is normally overly aggregative and often ambiguous. Furthermore, the methodology used results in a large amount of double counting and overlapping at every stage of the analysis. Finally, the whole notion rests upon a degree of planning

which is probably unacceptable to advocates of "free market" mechanisms. It is only useful to individual units of the economy.

The Bureau of Labor Statistics Approach

Since the end of World War II the Bureau of Labor Statistics of the United States Department of Labor has engaged in long-range occupational employment forecasting. These projections are developed from independent BLS analyses as well as from information obtained from industry officials, labor organizations, trade associations, professional societies, government agencies and other organizations. The forecasts emanating from the Labor Department are the most detailed and comprehensive ones available, and are heavily relied upon by government decision makers, vocational counselors, manpower and education planners and by individuals seeking career information. It is thus valuable for us to review the BLS/DOL operations with some detail.

The present BLS long-range manpower forecasting program began in the early 1960's with the formation of the Interagency Economic Growth Project, which represented an effort undertaken by the Labor Department in cooperation with government agencies and private research organizations to develop a comprehensive and integrated framework for analyzing the implications of long-run manpower utilization. One of the first major results of this effort was BLS Bulletin 1536, Projections 1970; Interindustry Relationships, Potential Demand, Employment, which summarized a major phase of the work of the Economic Growth Project.

Projections 1970 was an attempt to make consistent conditional projections from 1965 to 1970 of the detailed economic manpower effects which would result from several alternate compositions of GNP in the latter year. This bulletin

contained four separate 1970 projections: one for the economy operating with an unemployment rate of three percent; one for the economy with a four percent unemployment rate; one for the economy at four percent unemployment with a final demand composition stressing durable goods (high durables model); and one for the economy at four percent unemployment but with a composition of final demand emphasizing the service sectors (high services model).

In this BLS study the first step in obtaining conditional projections entailed the disaggregation of total GNP into six broad categories; federal government, state and local government, private fixed capital investment, gross private domestic investment, personnel consumption expenditures and net exports. Next, a detailed bill of goods corresponding to each of the assumptions as to the composition of 1970 final demand had to be developed for each of these six categories. In the following step in the process, required output was related to required employment through an interindustry-employment matrix which showed the total employment generated in and by every industry per billion dollars delivery to final demand. Finally, the required levels of employment in each industry corresponding to the alternate compositions of gross national product in 1970 were estimated.

More recently the BLS has extended the work begun in Projections 1970 by projecting the shape of the U. S. economy to 1980 under several different assumptions. Patterns of U.S. Economic Growth contains projections of the United States economy to 1980 taking account of forecast changes in gross national product, population, labor productivity, interindustry relationships, and prices. Here also the future shape of the national economy and labor force are projected under several different assumptions as to the composition of GNP in the forecast target year. In The U. S. Economy in 1980, the companion study to Patterns of U. S. Economic Growth, these

results are developed further and disaggregated into demand for selected occupational categories of manpower resources.

Finally, Tomorrow's Manpower Needs represented an ambitious attempt by the Bureau of Labor Statistics to incorporate forecast changes in occupational manpower requirements and further into regional employment demands.

In general, the BLS long-range manpower forecasts are developed in a series of distinct steps; (1) a set of basic assumptions concerning the shape of the social and economic environment in the future is formulated; (2) these assumptions are translated into basic economic parameters such as GNP, labor force, and unemployment; (3) the level of economic activity is translated into total employment requirements and employment by industry; and (4) employment by industry is then broken down into occupational manpower requirements.

The BLS 1980 manpower forecasts were based on a series of assumptions about the performance of the economy in the coming decade; (1) the labor force will be slightly larger than 100 million; (2) the economy will be operating at full employment (three percent unemployment); (3) the United States will not be fighting a war; (4) the institutional framework of the nation will not be radically changed; (5) basic economic, social, technological and scientific trends will continue at recent rates; and (6) environmental and social programs will absorb an increasing portion of the nation's resources.*

Next, the level of economic activity and real GNP in 1980 were estimated by combining projections of total employment with projections of hours of work and output per manhour. Separate projections of these variables were made for the public and the private sectors of the economy.

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*Note: Some of the assumptions made by BLS have obviously not taken place during the first half of the 1970's.

Once the basic economic variables for 1980 were fixed, detailed industry employment was estimated. Three different methods of doing this were used, depending on the data available, the level of industry detail required, and the characteristics of the industry. Ultimately, however, results obtained from input-output analysis of individual industries studied, regression equations and qualitative information concerning the technology and structure of the industry were used to determine the employment projections for each industry.

Finally, the BLS disaggregated industry employment into occupational employment by developing occupational patterns for each industry for 1980. The occupational structure of each industry was projected from historical statistics and other factors expected to influence occupational structure, such as new technology or changes in products. Employment requirements for most occupations were derived from the projections of total industry employment and the occupational pattern of that industry for 1980; however, for some occupations affected by their own complex set of social and economic variables, BLS analysis of the factors affecting employment was the basis for estimating future requirements.

Three years ago (June, 1973) at the North American Conference on Labor Statistics, Russell B. Flanders, Chief, Division of Manpower and Occupational Outlook, of the BLS offered interested parties some new and exciting news. He announced that the BLS was becoming involved in the development of state and local matrices and the subsequent use of developing occupational projects on these more localized bases. Thus, the procedure employed in the Tomorrow's Manpower Needs projections could now be implemented by state employment agencies across the country. Without question, the availability and use of a State matrix will increase the reliability of state and local occupational projections.

The new program will provide a set of 51 individual state (and D.C.) matrices designed to be consistent in format, concept and data base with the Bureau's national matrix. The Department of Labor of the State of Connecticut is now involved in the development of such matrices.

The occupational data base for this program is special tabulations of the 1970 decennial Census. These special tabulations cover, for each state, employment in approximately 425 occupational categories, cross-classified by approximately 200 industrial sectors. In addition, each industrial sector is sub-divided into several class-of-worker categories, such as self-employed, private wage and salary and government workers. Special tabulations can also be obtained for each SMSA with a population of 250,000 or more; in our case that includes the Bridgeport, New Haven and Hartford SMSA's.

The program provides a great deal of occupational data that should prove especially valuable as trend information in the years ahead. The computer system package will be adaptable to the survey data base. Thus, once the system is completed, states will be able to use the matrix computer system for sorting, retrieving and manipulating survey results. The matrix system will also furnish to states the capability of supplementing the survey effort by providing occupational employment estimates in non-survey areas, such as self-employed. Similarly, the Census-based matrices will make it possible to prepare estimates for occupations not included on all survey documents. For example, the occupation "maintenance electrician" may not be included on some OES questionnaires for industries where only a few such workers are employed. The matrix system, however, will provide an employment estimate for these workers in every industry sector. These estimates can be used to supplement the employment data collected in the survey program.

It might also be noted that the U. S. Bureau of Labor

Statistics can now also provide death and retirement, or replacement estimates for occupations by state for over 400 occupations. Separation rates are now available for males and females and may be used for the purposes of estimated future job openings.

Thus, we can end our review of long-range manpower forecasting methods here, because the above described federal and state sponsored programs represent the "best available" data. While it is true that other methodologies exist or have been recommended for implementation, many, such as complex input-output models, exist in more or less experimental form and are neither operational nor providing reliable output.

Data currently emanating from the State Department of Labor in conjunction with data published in the U. S. Department of Labor's Occupational Outlook Handbook represent the best source of long-range manpower-needs information on the most detailed basis. Short-run manpower needs information is another issue.

Short-Run Manpower-Needs Forecasting

As technically complex and costly the business of forecasting our manpower needs for the long term, it may be more challenging to do likewise for the near term. Educators, vocational guidance counselors, government leaders and agency officials are more constantly reminded of the costs of the absence of such information by regular contact with young people whose lives are negatively affected by the absence of reliable information necessary to a reasoned career decision-making process.

What appears to be a simple matter of surveying businesses and industry regarding their near-term manpower needs is not so simple. The difficulties engaged in the use of various methods of short-range forecasting were well explored under

"Project Vision: An Experiment With Occupational Needs Projection Techniques" which was conducted by the Wisconsin State Employment Service and published in 1970. Within this massive publication can be found an extended history of trial-by-error attempts to develop a reliable technique for projecting occupational needs in the Milwaukee, Wisconsin SMSA. Herein is a brief review of their experience with various methods:

1. The Experimental Employer Needs Survey

This approach is based on a modification of the Area Skill Survey technique. The standard skill survey is conducted by means of a prototype mail questionnaire which asks individual employers to forecast their employee requirements for the subsequent three and five years by specific occupations, taking into account both replacement and expansion needs (or contraction as the case may be).

Project Vision offered recommendations after testing this technique for manpower-needs forecasting. Their experiments proved that questionnaires, on the whole, had to be simplified considerably. As the surveys were conducted it became clear that they were too time-consuming and too expensive. The information requested was "ideal," to quote the project report, but at the same time much of it was impractical to obtain. It was costly to the State of Wisconsin as well. They recommended that standard surveys of this type (long-range) be "almost" abandoned and replaced by surveys conducted every two years that would emphasize occupational trend data in individual plants rather than projections of labor requirements. They further recommended that greater stress be placed on securing knowledge of employers preferred sources of entry-level personnel, untrained or trained, and information regarding their own in-plant training programs. In a closing, almost editorial note, the researchers noted that the inability of employers to use a common, technical occupational language produced a considerable amount of inadvertent misinterpretation on their

part. Indeed, literally all knowledgeable parties note that this is perhaps the most basic problem in the survey approach.

2. Other Employer-Based Approaches

The Wisconsin research staff attempted to discover whether the management plans of employers in specially designed samples would provide information on technological and occupational trends to offer some direction to vocational training in a labor market area.

The "Leading Indicators Experiment" attempted to identify the leading firms which might be among the more progressive and whose occupational mix and projected employment trends might provide information useful for planning. The method involved follow-up interviews with employers included on the mailed skill survey questionnaire. The results were not satisfactory because the 'findings' failed to reveal who the leading firms were!

The "Industry-Expert Approach" secured the desired information by means of interviews with industry experts from a more broadly representative group such as company presidents, plant managers, employment managers, training directors and others. Project Vision was rather enthusiastic about this approach. The qualitative occupational trend information secured for occupations within a specialized segment of an industry was judged to be eminently worthwhile. The research staff recommended that the technique be further developed with the provision that it only be applied to occupations peculiar to a selected industrial activity; it should not be used in connection with occupations which have a broad industry base.

3. Employer-Based Data as a Means of Identifying Emerging Occupations

Emerging occupations are those in which employment at the moment is small or nonexistent, but which may be expected to increase significantly. No special survey was made, but an

analysis of the Experimental Employer Needs Survey results and pre-test occupational materials was made which yielded a short list of occupations for which training programs might be usefully designed. Once again, PROJECT VISION's staff reported difficulties encountered with occupational definitions and terminology.

4. The Unfilled Openings-Occupational Outlook Handbook Approach

This approach used data available from selected records of the Employment Service agencies such as unfilled openings, in combination with routinely collected information from other federal and state agencies. Basic to the technique is the application of the Occupational Outlook Handbook forecasts of national trends in specific occupations. Its chief advantages are the economy of data gathering and the ease of repeating the analytical study at frequent intervals. It does not require gathering new original data, but relies on existing material and expertise in interpreting occupational trends locally in the light of national developments. Although there are certain deficiencies in the methodology, especially in regard to labor requirement for occupations not well covered by local employment service records, the method was judged to be useful to manpower planners as one of a number of labor market "indicators" provided certain revisions were incorporated so as to adapt data to the local employment situation.

5. The Occupation-by-Industry Matrix Method

PROJECT VISION staff did develop a U. A. BLS matrix to local area industry statistics. The matrix was a cross-classification of industries by occupations, yielding an occupational pattern for each industry "broken out." In terms of detailed future occupational projections, the method was found to have two statistical limitations. One was that the method made no allowance for employment requirements which normally result from worker-replacement needs arising from

deaths, retirements, migration and other causes. The other limitation stemmed from the varying definitions of employment used in the basic data derived from the various sources on which the method depends. As we indicated in earlier discussion, such difficulties should no longer present themselves thanks to the work of the Bureau of Labor Statistics during the early 1970's.

PROJECT VISION's final report also dealt extensively with the methods available for the estimation of manpower supplies in the short-run. While it reviewed some of the "gap" areas for which little or no data was regularly collected, it described the collection of this type of information as largely a problem of cooperation among government agencies at the state and federal levels.

The report closes with a strongly worded suggestion that states strengthen their efforts to provide educators with more reliable short-term (one or two year) economic forecasts to compliment the long-term data being developed by the BLS.

Summary

The rationale for reviewing both the long-range and short-range forecasting techniques available here was not simply for the educational benefit of the reader. Our review of efforts in this area conducted around the country have led us to conclude that states must adopt short-range survey instruments to delineate the more immediate manpower demands of business and industry. Recent developments in long-range forecasting have raised the "state of the art" considerably, but a serious gap exists in terms of short-range information. To a considerable degree, the practice of vocational career counseling in the states reflects that information gap.

Chapter VII

MANAGEMENT INFORMATION SYSTEMS

A Management Information System (MIS) is a tool which provides program planners/decision-makers with the information they need to make intelligent and informed decisions. An MIS is usually used by institutions, i.e., state departments of education, local or regional school boards or other agencies. The data acquired through an MIS, however, has considerable relevancy for counselors and other local personnel involved in career guidance. An MIS affecting career planning and development might, for example, include the following components (group data on):

1. Information concerning individual career aspirations.
2. Information concerning individual's abilities, aptitudes and interests.
3. Information concerning institutional capabilities--facilities, staff, finances, etc.
4. Information concerning labor market needs.

Tying these elements together into meaningful relationships is the task of a Management Information System.

Following is a brief summary of the initial efforts of the Connecticut State Department of Education in undertaking to develop a statewide educational MIS. It should be noted that Connecticut State Department of Education personnel have moved rapidly toward implementation of the recommendations outlined below. The following reprints represent Connecticut State Department of Education planning efforts:

Connecticut State Department of Education
Management Information Systems Development

Introduction

Management Information System may be defined as:
A massive compilation of non-redundant, structured, related data stored in ways that will make them instantly accessible to those managers who have an established need to know, in any combination of relationship the manager may desire.

Management Information System can be developed for a single institution and a whole system of educational institutions. When a whole system of institutions is involved, the problem becomes more complex since the specifications of each information element stored must be agreed upon, and that definition must be uniform throughout the system. To meet these needs there must be an agreed upon common data element to insure uniform use of all terms and to show the logical arrangement of data and the records within which they are used.

The plan will formalize overall Management Information System Department direction and will serve as the basis of a plan of action developed for each year. The plan of action will take the form of Department goals and objectives developed by the State Board of Education.

Any information development for the Department will work in concert with and as an integral part of the overall plan for Department development. Perhaps this guide will serve as a catalyst to encourage greater management information planning for the entire Department.

Through annual revision and review by Management Information System Steering Committee, it is our belief that this plan will prove to be a flexible and responsive approach to dealing with conditions which may range from putting school finance on a sound and equitable basis to strengthening and broadening the educational system's approach to career preparation of the student.

Goal: To develop and implement an efficient, comprehensive management information system which will have statewide impact on the educational decision making process in Connecticut.

Objectives:

1. To develop and implement an administrative structure for management information system development and implementation.
2. To develop and implement a financial information system.
3. To develop and implement a staff information system.
4. To develop and implement a student/client information system.
5. To develop and implement a program information system.

6. To develop and implement a facilities information system.
7. To develop and implement a central management information system.
8. To establish an experimental network of regional management information centers.

Needs: Effective development and integration of management information systems necessitates that the systems be viewed from the following perspectives:

I. Needs of Policy and Legislation Initiators:
   1. From the perspective of the members of the State Board of Education, a rapid, comprehensive, relevant and coordinated management information system must be developed and the requisite information must be provided in order to develop meaningful and effective policies and regulations.
   2. From the perspective of the State Legislators, relevant information must be integrated and available to provide for effective legislation to insure that Connecticut students develop to their fullest potential.

II. Needs of Education Administrators:
From the perspective of the Administrators (Commissioner, Associate Commissioner, Superintendent) at each level, information systems must be integrated across functional boundaries at each jurisdictional or organizational level to provide information useful in terms of their educational goals and objectives.

III. Need for Interagency Communication and Coordination:
From the perspective of other state and federal agencies, information systems development must include consideration of the information sources and systems of these agencies.

Policy: The following policies govern the Connecticut State Department of Education Management Information System:
1. The Management Information System (MIS) Unit is established to manage the development, adaptation, and implementation of a Department Management Information System.
2. The MIS Unit is primarily responsible for supporting the information needs of the State Board of Education, Secretary, Assistant Secretary of Education, and the constituent units of the Department.
3. All activities and decisions of the MIS Unit are subject to review and/or approval by the MIS Steering Committee.

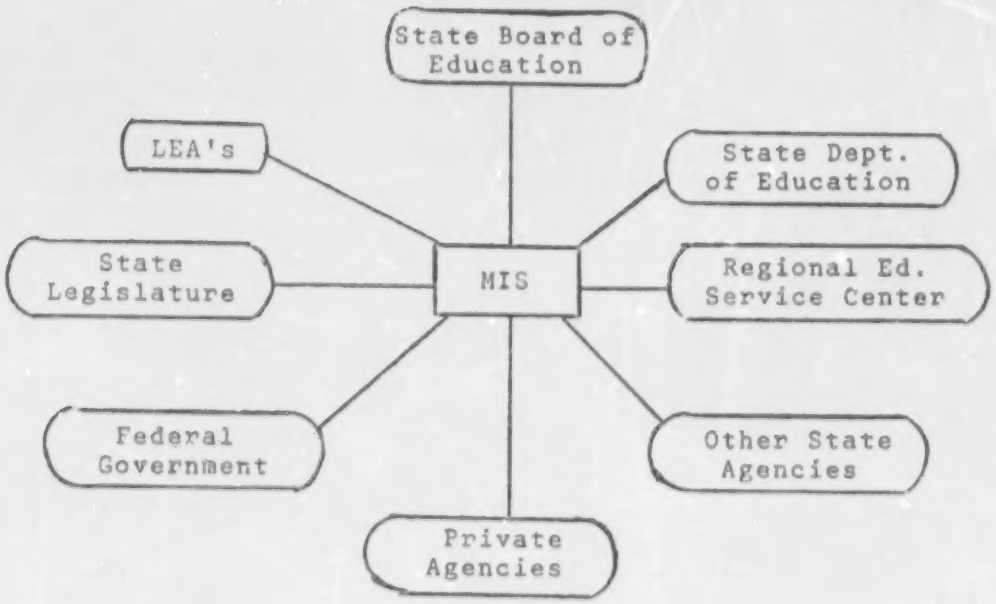
4. The MIS Unit has authority to cross division boundaries to develop the MIS system, a central management information center and a regional information center network.
5. The MIS Unit is charged with coordinating and administering the development and implementation of the following information systems and associated task forces: a financial information system; a program information system; a facility information system; and a community information system.
6. The task forces will be organized by, managed by, and responsible to the MIS Unit. Each task force will develop the procedures and implementation schedule to be followed in establishing its particular information system.
7. All information gathering projects conducted by the Department are subject to review by the MIS Unit.
8. Financial and manpower resources will be made available to the fullest extent possible by the Department.
9. The Management Information System will be designed to:
   (1) Report to the public on the success of the educational enterprise and on cost/benefit results.
   (2) Make clear and accurate predictions of the future in order to enable the decision maker to design and evaluate their educational plans.
   (3) Meet the managerial needs of the State Department of Education and provide appropriate feedback to the local education agencies.
   (4) Provide accurate, timely information to the legislature, educational interest groups and other local, state and federal agencies.
   (5) Minimize duplication in informal collection and processing, and integrate federal, state, regional, local and other information reporting requirements.
10. The principles and procedures for maintaining the privacy and confidentiality of collected information must be established by:
   (1) Selecting and collecting appropriate information items for individual records.
   (2) Carefully screening persons who will handle confidential information.
   (3) Restricting access to individual information.
   (4) Insuring safeguards for personnel-oriented files in the possession of contracting organizations and other agencies.
   (5) Transferring personal information to an authorized third party only with the consent

of the individual to whom the data pertains and only on the condition that the third party not permit any other party to have access to the information without the written consent of the State Department of Education.

(6) Concealing the identity of individuals or institutions desiring or entitled to confidentiality, through appropriate procedures for aggregating, encoding, and releasing sensitive information. Except in rare instances, only aggregate data on student performance is to be collected by the State Department of Education.

(7) Systematically destroying information no longer needed.

MIS USERS



Steering Committee

In the creation of a management information system, one of the responsibilities of top management is to propound its goals of the Department and to investigate the objectives of the Management Information System (MIS) which will best serve these goals.

The continued active participation of top management -- in defining objectives, enable their realization, and in exercising throughout a lively and positive control -- is essential if the system is to succeed in its ambitious purpose of supporting the overall control of the Department's operations. In our Department there can be identified certain areas of potential difficulty which have a strong effect on efficiency. To deal effectively with these areas requires an effective information system.

Composition

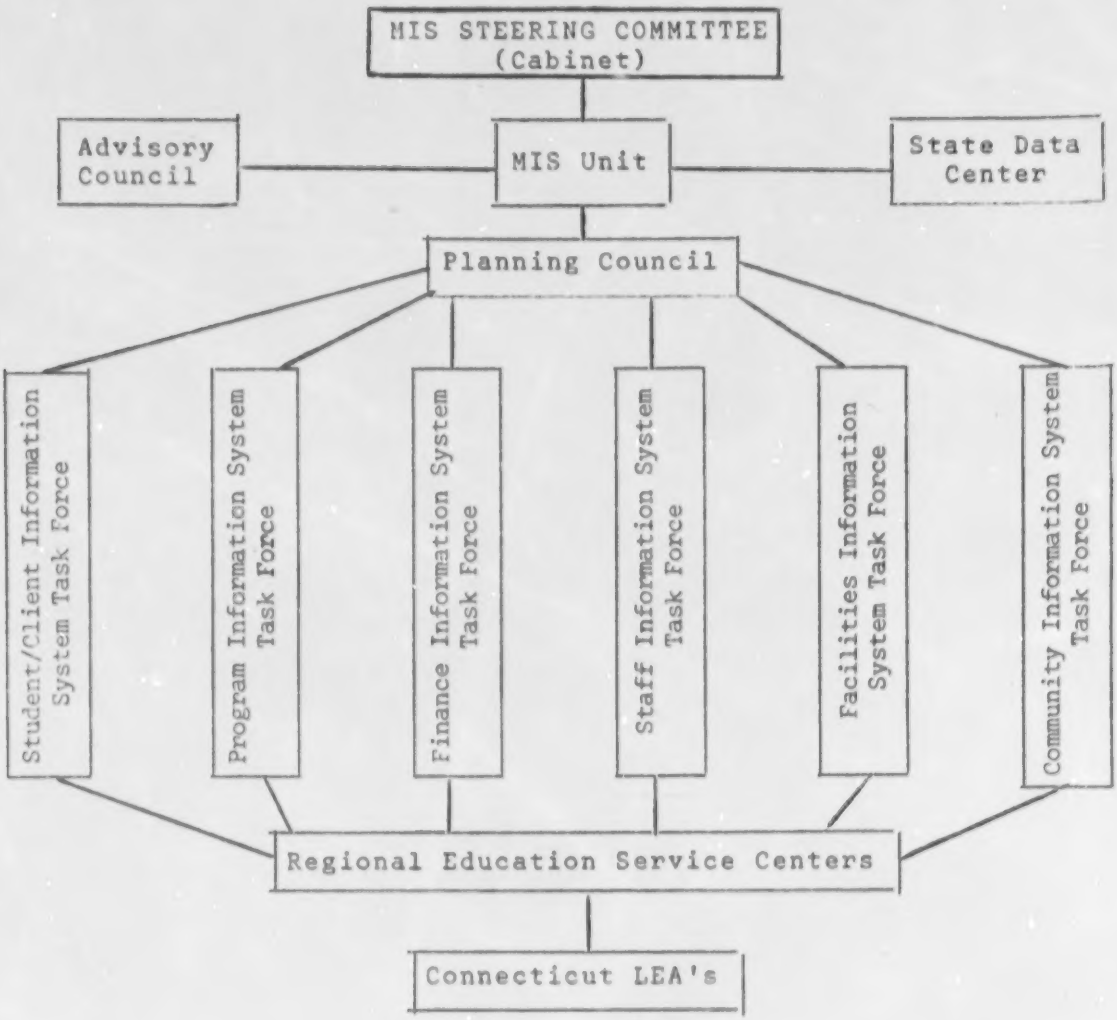
A steering committee combining management insight and operational experience of user representatives with the expertise of available staff or outside consultants, should be formed to direct the systems effort. The participation of those top managers whose divisions will be involved must be secured from the start. The steering committee should be presided over by a member of top management, and its secretariat should be provided by the Management Information Unit. The following members are recommended for the committee.

- Commissioner of Education
- Deputy Commissioner of Education
- Associate Commissioner of Administrative Services
- Associate Commissioner of Internal Management
- Associate Commissioner of Vocational Education
- Associate Commissioner of Vocational Rehabilitation
- Manager, Management Information System
- Consultant, Management Information System

The following tasks could be considered for the steering committee:

- Issue directive for the system analysis.
- Guide and participate in the system analysis phase.
- Decide whether or not to continue the system effort.
- Define, qualitatively, and quantitatively, objectives for further system efforts.
- Approve hardware order.
- Assign people to the project team, relieve them from other tasks, arrange necessary training.
- Introduce the systems effort in the organization.
- Settle reporting lines for teams.
- Install planning and control procedures.
- Support and authorize project schedules.
- Approve budgets.
- Define priorities, consider and evaluate if objectives are fulfilled.
- Approve cost and benefit calculation.
- Approve and authorize new system design.

- Perform ultimate control on progress, quality, cost and realization of the project.
- Introduce and promote the new system in the Department.
- Perform post-implementation evaluation.



Meeting dates and communication procedures

The steering committee, which may assemble only at intervals of about a month, depending upon the progress of the project, must be in continuous communication with the project team. For this purpose, the manager of the Management Information System Unit, who is a member of the steering

committee, should be available for day-to-day coordination with the project team; if necessary, he will arrange for intermediate reporting and for joint discussions of specific problems with the steering committee.

Guidelines for MIS Task Force

The mutual as well as unique needs of the populations to be served by the MIS mandate that user representatives be actively involved in the system's design and monitoring. Six task forces of approximately nine members each will constitute the basic working groups of the MIS. The members of the task forces will be the primary agents to help guarantee the viability and longevity of the MIS.

1.0 Purpose

The purposes of the task forces are to:

1.1 provide liaison between the primary user groups and the MIS.

1.2 determine the functional specifications of each subsystem and to review periodically such specifications.

1.3 assure necessary instruction and training of user groups.

1.4 assess the reliability and validity of the products of each subsystem.

2.0 Operational Procedures

2.1 it shall be the specific responsibility of each task force member to:

2.1.1 assist in arranging and conducting interviews and investigations in order to determine and document the present methods of operation.

2.1.2 represent his/her group when the task force is determining and evaluating requirements and constraints for the subsystem.

2.1.3 represent his/her group in meetings where alternative system designs are considered.

2.1.4 help to identify the need for new or modified procedures and forms and to assist in their preparation.

2.1.5 assist in the development of data used in the testing of the programs and subsystems and help evaluate the results.

2.1.6 participate in conducting training seminars for personnel who will use the subsystem.

2.2 Each task force member shall commit the minimal equivalent of twenty percent (20%) of the customary work week to participation on the task force.

2.3 Each task force shall meet at least once per week at times and places to be determined by the task force.

2.4 It shall be the responsibility of the MIS Unit representative(s) on each task force to:

2.4.1 coordinate activities within and between the task forces.

2.4.2 provide for basic instruction on data processing and data-based management to members of the task forces.

2.4.3 coordinate activities between the task forces and the State Data Center.

2.4.4 keep the MIS Steering Committee apprised of the status of each subsystem.

3.0 Composition

3.1 General Considerations

3.1.1 each task force shall include at least one member of the MIS Unit.

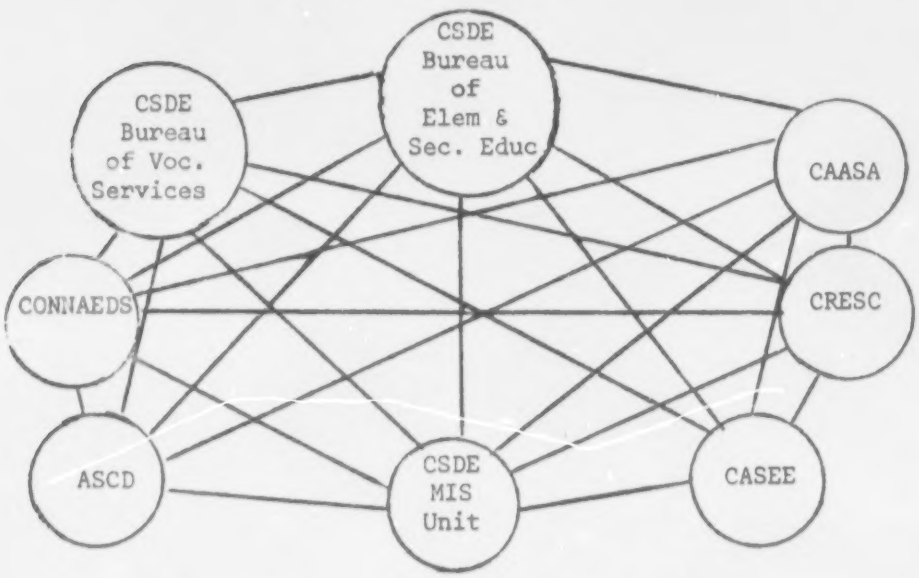
3.1.2 Each task force shall be directed by a member of the MIS Unit.

3.1.3 Each task force shall be composed of approximately nine members.

3.1.4 Task force members shall be selected to represent a broad spectrum of user interests.

Program Information System Task Force

(Suggested Composition)



Within the framework of an overall MIS, specific planning techniques may be developed. Career planning and decision-making can be made easier given data output from an MIS. Counselors are in a key position within any MIS. They can survey student career aspirations and they can provide group data on student characteristics. This information can then be fed into the system for comparison with institutional and labor market information. The output will be information useful to counselors and clients interested in career decision-making.

Much work needs to be done in order to develop a useful MIS that is geared to local and state needs. Numerous models have been presented. The Ohio State model (MISVE), for example, offers a comprehensive approach to vocational planning (see Appendix for a description of MISVE). This and other systems need to be explored more fully and adopted to meet local career planning needs.

Chapter VIII

CAREER GUIDANCE CONCEPTS AND PRACTICES
LOOKING AHEAD

Looking back at the history of the vocational guidance/career development movement it is easily understood that the occupational choice concerns of the early practitioners must be placed in the context of total human development. "While occupational choice is important and attention in our career guidance practices must be focused upon it, it cannot be viewed as something separate from the other settings, roles and events of an individual's total life" (Gysbers, Drier, and Moore, 1973, p. 114). Current research and writings indicate that the single-occupational-choice-at-a-point-in-time has been encompassed by a broader emphasis which focuses on choices made over a life span. The current emphasis is on staff development in relationship to occupational choice as well as to many other types of choices in an individual's life.

To represent this broad encompassing view, Gysbers and Moore (1972) have used the term life career development. The term life focuses attention upon the total person, while the term career identifies the many settings in which an individual finds himself -- home, school, occupation, community; the roles which he plays -- student, worker, consumer, citizen, family member; and the events which may occur in his lifetime -- entering job, marriage, retirement. The word development is used to indicate that people are continually changing over their lifetimes. When used in sequence, the words life career development bring these separate meanings together. They mean more than the words themselves. Taken collectively, they describe the whole person -- a unique person with a unique lifestyle.

Following are some concrete examples of school-based career information services. They should be viewed and used in the larger context suggested above, if they are to have their greatest impact on student career development.

Career Information Services: A Definition

Pupil personnel services are often divided into several component parts for purposes of implementation. The health service, pupil accounting, and psychological services are typical divisions. The major aspect of the function, however, is usually referred to as guidance services. Generally, there is agreement as to the activities of the guidance program, although there is often local variation in the manner in which these services are provided. The number of services often ranges from five to eight, depending on how the author groups specific services. One such classification scheme includes the following major guidance services: the Individual Inventory Service, the Information Service, the Counseling Service, the Placement Service, and the Follow-up Service (Norris, Zeran, and Hatch, 1969).

The Information Service of the program of guidance services is designed to provide valid information about the educational, occupational, and social aspects of the present and probable future environment of students. Occupational or career information comprises the largest amount of useful material specifically prepared to assist youth and adults to obtain valid information about present and probable future opportunities. Career information is valid and usable data about positions, jobs, and careers, including duties, requirements for entrance, conditions of work, lifestyles, rewards and disadvantages, advancement opportunities, existing and predicted supply of and demand for workers, and related sources of information.

The idea of providing career information services is not new. Parsons in 1909 pointed out that vocational choices would be improved with the possession of better information about occupations, better self-knowledge, and sound reasoning concerning the relationship of self to occupational data. There are, however, new methods and techniques for presenting career

information which will be the focus of this chapter. Paradoxically, the area in which there is the widest discrepancy between the amount of available materials, on the one hand, and the knowledge of their availability, on the other, is in the area of career information. If the school is to play a role in assisting the student in developing an adequate and integrated picture of himself, it follows that the school should provide the student with knowledge of the world of work through meaningful career information services.

Hoppock (1967) describes two types of career information: original sources and intermediate sources. Original sources include the worker, the employer, and government regulatory agencies. Intermediate sources include government and commercially produced publications such as the Occupational Outlook Handbook and the Job Guide for Young Workers, periodicals, occupational briefs, and other multi-media materials. Hoppock suggests that the counselor who depends upon his library for all his occupational information will be unable to answer many of the questions that come to him and his clients will be unable to find the answers without his help. He suggests that the original source is often the best source of career information. This suggests new and different approaches to the delivery of career information services for the counselor.

Hoyt (1972) outlined the following five areas where the counselor should be involved in career education:

1. Help classroom teachers emphasize career implications of their own subject matter.
2. Help to strengthen vocational skill training in formal education.
3. Help business, labor, and the community to become involved in career education.
4. Help the family to participate in career education.
5. Exercise leadership in career development programs.

Career information services can be viewed, then, as a dynamic and integral component of the overall career education

program. The counselor plays a central role in the process of information delivery. The counselor cannot perform this vital function alone. Administrators, parents, teachers, and community representatives all play a part in providing career information services. The counselor thus assumes his expanded role as a catalyst and resource specialist. The roles and functions of other professionals and community representatives will become clearer as we discuss strategies for implementation.

Goals and Objectives for Career Information Services

The following general goals may serve as guideposts pointing toward a more comprehensive and effective program of career information services:

1. To develop a broad and realistic view of career and training opportunities for all students.
2. To create among students an awareness of the need and an active desire for accurate and valid career information.
3. To provide an understanding of the scope of educational and career information available to students.
4. To assist in the mastery of the techniques of obtaining and interpreting career information.
5. To promote attitudes and habits which will assist in the making of personally satisfying and valid career choices.
6. To provide materials and assistance in narrowing career choices progressively to specific activities which are congruent with students' abilities, aptitudes, and interests.

Some specific objectives in the career domain have been delineated by the Connecticut State Department of Education, Bureau of Pupil Personnel Services. These objectives were adapted from earlier work by the California Personnel and Guidance Association. All of the objectives listed below involve the use of career information services to achieve their stated ends, although some of the objectives fall more clearly under the realm of counseling and/or placement activities.

1.1 Each student develops an awareness of the world of work.

Objective: Each student is aware of the training requirements and needed skills at different occupational levels.

Objective: Each student is aware of the work roles and social roles expected at different occupational levels.

Objective: Each student is aware of differences between necessary skills and expected role behaviors at different occupational levels.

Objective: Each student is aware of the concept of work in our society, the occupational structure, and significant trends.

1.2 Each student develops an accurate picture of himself in relation to the world of work.

Objective: Each student is aware of his particular occupational abilities, interests, potentialities and limitations.

Objective: Each student is aware of his attitudes and emerging values toward the various social roles and work roles required at different occupational levels.

2.1 Each student develops an accurate concept of self in relation to the world of work.

Objective: Each student makes a tentative choice of an occupational cluster that is consistent with his interests, aptitudes, and abilities.

Objective: Each parent formulates occupational expectations for his/her child that are consistent with his/her abilities and interests.

2.2 Each student develops an effective work behavior pattern as requisite to the achievement of career goals.

Objective: Each student identifies career alternatives that are consistent with his ability and interests.

Objective: Each student is competent in solving career problems through planning, decision-making, implementing decisions, and evaluation.

Objective: Each student develops an attitude that effort consistent with his ability on work tasks is important.

Objective: Each student expresses creativity in work tasks as he is able and gains satisfaction from the experience.

3.1 Each student effectively implements career choices.

Objective: Each student participates in a training

program that is necessary for entrance into his chosen career.

Objective: Each student participates in activities that are related to and expected in his chosen career.

Objective: Each student makes the adjustments necessary to maintain consistent progress toward the achievement of career goals.

3.2 Each student derives personal satisfaction and sense of worth from the pursuit of a career.

Objective: Each student understands within reasonable tolerances the relationship between his chosen career and his measured ability and interest.

Objective: Each student acquires a feeling of competence and adequacy in the performance of his chosen career.

Objective: Each student understands within reasonable tolerances the relationship between his aspired "life style" and the "life style" of his chosen career.

3.3 Each student achieves success in the pursuit of career goals.

Objective: Each student gains employment in a career which he has chosen.

Objective: Each student feels success in his employment.

The objectives stated above are expressed in terms of expected student outcomes. Schools offering viable career information services are better able to produce these changes in students than schools with a weak guidance information component. Some suggestions for improving career information services follows.

Implementation of Career Information Services

It is strongly suggested that each school establish a career information resource center for student use. Some suggested start up activities related to the development of a resource center include the following:

1. Identify all commercially available career resource materials.
2. Identify non-commercial career resource materials

using ERIC, EPIE, AIM, and ARM Abstracts. (Contact your regional Career Education Resource Center for assistance.)

3. Identify student needs for career information.
4. Identify local career resources. Build a community resources file.
5. Analyze materials and make recommendations for school use.
6. Determine space needs and physical resources available.
7. Acquire and catalogue appropriate materials.

The purpose of the career information resource center is to provide the most current and usable career-related information possible through a variety of means and in such a way as to serve the needs of individual students. The materials used in these centers should be under constant trial and evaluation in an effort to determine which types of materials best serve the intent of the centers. Appropriate evaluation instruments should be employed. Some considerations in establishing a resource center are as follows:

Cost. Any new or expanded service being considered by a school system should prove itself to be economically feasible as well as a valuable aid to the students to be served. Major concerns relate to the cost of materials to be added and the space required to house the resource center. It is here that schools should turn to existing centers for assistance in outlining a purchasing and acquisition program. The initial investment need not be great, and the year-to-year maintenance expense will be minimal in light of the benefits to students. An initial investment of $1,000 to $1,500 for materials and $500 to $1,000 for equipment is usually sufficient to start a resource center. Check with your Superintendent of Schools regarding availability of funds. Your regional Career Education Resource Center can help you select appropriate equipment and materials. An annual budget of $500-$1,000 is usually adequate to cover additions to the center, the cost of mailing requests for free information, and renewal of outdated

materials. These costs will vary considerably depending on the size of your school and the level of sophistication your center is striving for. Costs can be reduced by using teacher/student produced materials and by using the materials and services of your regional Career Education Resource Center.

Space. The space devoted to a career information resource center will often be limited by conditions to be found in the individual school building. Ideally, a classroom-size area would be converted to house the center. In such cases, the room would remain available for other forms of student activity (conference room, guidance area, etc.) while functioning as the career information resource center of the school concurrently or during such times as schedules would allow. When local conditions prohibit space allocation of this nature, other areas may be utilized successfully. A center might be established as a part of the library, the guidance area, or incorporated into some other instructional locale according to the desires of those planning and maintaining the center. In all instances, an area of 200 square feet of floor space should be considered as the minimum for effective conversion to meet the demand which will be experienced as the center becomes operative.

Functions. In addition to providing extensive and current resource materials for students and others, the career information resource center offers the following advantages:

1. The center serves as a visual, viable element of the overall career education implementation strategy.
2. Guidance and counseling services within the school are enhanced in the eyes of students and community.
3. Small-group instruction and small-group guidance are encouraged by the presence of the facility and its offerings.
4. An opportunity is afforded for numerous types of new classroom activities, relying on the resources available in the center.

Staffing. Several staffing options are possible. The concerned professional staff might assume responsibility for maintaining the center and its materials in proper form. Paraprofessional assistance could be employed, with exceptional results. Students should also be involved in all phases of the operation. In all probability, schools will arrive at some combination of these potential staffing strategies.

Center Components. While not all-encompassing, the following components are listed and briefly described as to their content and merit for student use in the career information resource center.

1. Free materials Section: A wealth of material in the form of booklets, brochures, briefs, and books is available at little or no cost. A form letter briefly explaining the need for this type of information usually brings good results.
2. Audio-visual Section: The vast range of commercially prepared items allows for flexibility in this portion of the information center. Included are filmstrips, slide-tape sets, microfiche materials (including Connecticut VIEW materials available from the Capitol Region Education Council) and new products now appearing on the market. Slide-tape sets are often prepared by students as part of their assigned classwork.
3. Higher Education Section: Included are college catalogues, bulletins, and other information on preparation programs requiring a minimum of a bachelor's degree. Much of this material may be found in present guidance programs. Time Share Corporation of West Hartford offers a college catalogue collection on microfiche on a subscription basis.
4. Community College Section: Literature pertaining to Connecticut community colleges and vocational-technical school programs is available through state and local offices.
5. Specialized Schools Section: Materials concerning the special types of post-secondary programs offered by private institutions should be maintained separately from community college literature. Information may be obtained directly from these schools or from the state licensing and accrediting division.
6. Occupational Briefs Section: Commercially produced occupational briefs are available from S.R.A.,

Guidance Associates, and other vendors. Connecticut VIEW packages mentioned in #2 above also provide an excellent source of localized occupational information.

7. Military Careers Section: Ample materials are available from various commands and recruiting centers. Many of the references deal with special training programs.

8. Government Publications Section: Several excellent government publications are available including the Dictionary of Occupational Titles and the Occupational Outlook Handbook (recently revised). In addition to easy access, students should be instructed in proper use of these documents.

9. Small Group Guidance Section: The use of a space within the school for a career information resource center does not preclude its use for other functions. Furniture and space for small-group guidance also provides an attractive setting for any number of student activities.

10. Testing Materials Section: In addition to standardized tests, interest inventories and other newer vocational tests are valuable. Your regional Career Education Resource Center can help you select appropriate instruments for use in career counseling.

11. Display Panels Section: Timely, attractive displays of career related articles, posters, pictures, etc., do much to add to the pleasantness of the center. An occupational cluster approach may be used to feature a "cluster of the week."

12. Reading Area Section: At least two tables or study carrels should be provided in addition to the small-group guidance facilities for use by students wishing to spend time in study, exploration, or research.

13. Periodical Section: All career-related periodicals should be made available near the reading section. Examples include: college magazines, Career World, Career Development Newsletter, Popeye Comics.

14. Hardbound Section: A number of quality materials appear only in the form of hardbacks. These materials could also include career related biographies on loan from the library.

15. Financial Aid Section: Materials delineating types of aid and procedures for applying should be compiled, preferably in relation to occupational areas if the materials lend themselves to such a classification scheme.

16. Exploration Kits Section: Several kits featuring "hands-on" types of experiences are available commercially. These tend to be used somewhat more at the junior high school level, but may become a part of the senior high school resource center as well.

17. Resource Person File: Many schools implementing career development programs have derived benefit from different occupations who volunteer to serve as resource persons for an occupation may visit the school or allow students to visit them on the job.

18. "Mail Order Section": A typewriter and correspondence materials should be available for use by students and staff in obtaining information concerning careers and training opportunities.

19. Computer Terminal: Computerized occupational information retrieval is perhaps the most sophisticated of the advanced technological methods of providing guidance services. Computer terminals can also be used effectively to retrieve information on colleges and scholarships. The most widely used computerized guidance system used in Connecticut is the Guidance Information System and is available through the Capitol Region Education Council in Windsor.

20. Placement Section: The placement process is of major importance and is discussed in detail in another section of this document. The career information resource center is a logical place to focus career placement efforts.

Guidelines: Some helpful hints that will assure maximum and effective utilization of the career information resource center include the following:

1. Involve students and teachers in the procurement of materials for the center.

2. Plan the center so that it is a separate resource area. If it becomes necessary to include the center as a part of a library or subject matter resource area, make provision for individualized use by students.

3. Select materials carefully. Total cost for initial materials may be held to a minimum by consulting with regional Career Education Resource Centers who have had experience in this area.

4. Provide for staff inservice to familiarize classroom teachers with the available materials.

5. Develop learning packets for use by students.

6. Constantly up-date and up-grade the center materials.
7. Encourage small-group activity in the center. The environment is ideal for such activity as a part of the guidance program.
8. Encourage casual use by students.
9. Provide an accounting system for control of materials. Student assistance is often all that is needed.
10. Share your ideas, problems, and successes with other schools in your area.

The career information resource center thus provides a focal point for the delivery of career information services at the local level. To expand the effectiveness of the services offered, additional activities of the counselor and other staff as well as community involvement are necessary. In-class activity and community involvement round out the services offered.

Guidance personnel should work with administrative and instructional staff in the implementation of a career education program by providing data on occupational opportunities, by defining the concommitant educational-training needs, by providing the information for classroom use which will introduce students to these opportunities, and by development of classroom activities for increasing student self-awareness in terms of interests, abilities, and values. Guidance personnel should also work with parents and community representatives in terms of structuring experiences in the community that will expand the students' awareness and appreciation for the work world.

Summary

The counselor plays a key role in the development and implementation of effective career guidance programs. The career information services component of the guidance program is essential to the total efforts of any career education program. Administrators, parents, teachers, and community

representatives also provide important assistance in providing career guidance.

Career information services have an integral place in an on-going, developmentally-oriented career guidance program. Career guidance programs should include the following components: occupational and educational information dissemination; self-concept development; role-testing; and decision-making. The counselor plays an important part in the process of assisting students to understand themselves more fully, in providing students with opportunities to test newly acquired self-knowledge, and in providing a variety of experiences aimed at enhancing student decision-making skills. Career information services provide excellent resources for the provision of occupational and educational information; for cataloging additional information on resources for career exploration; and for the provision of a means to interact in career decision-making activities.

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APPENDIX

The Management Information System for Vocational Education (MISVE)

An Advanced Management Information System
for
Vocational Education

The Center for Vocational Education
The Ohio State University
Columbus, Ohio

System Advantages

The Center for Vocational Education has under final stages of development, though not fully field tested, a comprehensive and generalized Management Information System for Vocational Education (MISVE). MISVE addresses itself directly to the national concern for better planning and accountability through improved utilization of information.

This advanced management information system contains an extensive prototype data base that includes the most current information concerns of vocational educators. The MISVE prototype data base is not intended to be an exhaustive definition of vocational education data suitable (or necessary) for generating management information; rather, it does provide a broad base from which any user can begin to customize a data base applicable to a particular vocational education agency operating environment.

A generalized data base management system computer software package, SYSTEM 2000, has been selected for use with MISVE. SYSTEM 2000 operates on IBM, UNIVAC, and CDC computer hardware and under a number of hardware operating systems and teleprocessing monitors currently available to most state level education agencies, universities and community colleges. SYSTEM 2000 can be acquired from the vendor under a variety of purchase and rental arrangements, or computer time can be purchased from commercial computer service bureaus that offer SYSTEM 2000 to their subscribers. Computer software maintenance is obtainable directly from the software vendor or the computer service bureaus in which SYSTEM 2000 resides.

Although MISVE users can build a library of procedural language computer programs, MISVE utilizes a GDBMS with natural language capabilities in the interactive mode that are specifically oriented to: (a) reduce the need for programmer intervention, (b) facilitate ad-hoc (on demand) data base

inquiries, and (c) enhance "hands-on" immediate access to the MISVE data base by management or other applications users to produce user-specified informational output in a variety of formats. Data elements in the data base can be retrieved in the interactive mode in nearly any combination. In addition, planners can query the data base in the interactive mode inserting arithmetical expressions and hypothetical arguments to obtain estimates of outcomes under alternative assumptions about the future (e.g., projected instructional costs per FTE based on different assumptions about projected enrollments, instructional time, class size, salary increments, current instructional costs, and teacher turnover).

MISVE is specifically designed to deal more effectively with the needs of most information system administrators who must periodically redefine vocational education information, update existing data bases, rapidly access stored data in a form and at a time when they are needed, and who must have options open to them for acquiring and maintaining computer software on computer hardware that are available to them.

The adaptability of MISVE's prototype data base to meet unique user requirements, and the various options available for acquiring and operating MISVE will enhance its usefulness for vocational educational agencies who already have heavy investments in MIS, as well as for those agencies having minimal or no MIS but want to initiate or upgrade their current capabilities.

System Features

MISVE as a product package is composed of six components:

1. a prototype data base;
2. a prototype set of data collection instruments;
3. a commercially available generalized data base management system (GDBMS) computer software package;
4. a prototype data base structure and accompanying data base definition for use with the GDBMS;
5. applications programs for editing, loading, and updating the MISVE data base and for building translation tables; and
6. a set of system documentation.

A description of each of the six components of the MISVE product package follows.

Data Base

The MISVE prototype data base is designed to have general

applicability for meeting a wide range of management information requirements commonly encountered by many states. The data base includes the following categories of data:

1. student data, including courses, length of instruction, and enrollments;
2. staff data, including credentials, professional improvement experiences, assignments, and salaries and benefits;
3. program data, including current and projected staffing requirements, students' characteristics, educational outcomes, and placement and follow-up experiences;
4. equipment and materials data, including needs and cost data;
5. facilities data, including utilization and location data;
6. financial data, including current and projected instructional costs and resource allocations by source(s) of funding, and
7. manpower demand data collected from external sources such as the U.S. Department of Labor.

Data Collection Instruments

MISVE provides users with a set of 20 prototype data collection instruments to retrieve data at the secondary, post-secondary and adult levels. The prototype data collection instruments logically fall into three categories based on the types of data involved. These categories are: (a) administrative data; (b) student data in aggregate form; and, (c) individual student data. The titles of the prototype data collection instruments are as follows:

Administrative Data

Local Plan for Vocational Education: Current and Projected Enrollment and Resource Requirements

Application for Approval of a New Vocational Program

Application for Approval of a Continuing Vocational Program

Request for Approval: Equipment, Special Materials, and Services

Application for a Vocational Credential (Colorado instrument used as illustration)

Current and Projected Requirements for Administrative, Supervisory, and Ancillary Staff

Current and Projected Requirements for Instructional Staff

Vocational Education Instructional Staff Information

Vocational Education Administrative Supervisory and Ancillary Staff

Student Data - Aggregate Form

Vocational Program Enrollment Report

Disadvantaging Characteristics of Students with Special Needs

Handicapping Characteristics of Students with Special Needs

Services Provided to Students with Special Needs

Program Enrollment Status Report

Placement Information for Program Completers

Survey of Former Occupational Students (Colorado instrument used as illustration)

Student Data - By Individual

Beginning-of-Term Enrollment Report

End-of-Term Enrollment Report

Special Needs Enrollment by Characteristics

Placement Information for Program Completers

Computer Software

SYSTEM 2000, developed and marketed by MRI Systems Corporation, Austin, Texas, has been selected as the generalized data base management system (GDBMS) computer software package for use with MISVE. SYSTEM 2000 operates in interactive, remote batch, and batch processing modes and provides two natural (English-like) languages for accessing and updating data bases. An optional report writer feature is available for producing, by means of the natural language capability, more complex one-time reports. Procedural computer language

interface programs permit MISVE users to continue to use their existing procedural language computer programs written in COBOL, FORTRAN, or PL1, or to write new computer programs for producing standard reports.

Data Base Structure and Definition

A prototype data base structure, compatible with the SYSTEM 2000 GDBMS computer software package, has been developed for use with MISVE. This data base structure is a logical and hierarchical network of data elements and groups of data elements within the data base. The particular structure of the data base and the subsequent programming of this structure to interface with the GDBMS source code affects data base retrieval, updating, and reorganization. The design of the current prototype data base structure was based on the presumed relative frequency with which data likely would be accessed and updated by a typical state vocational education agency.

The arrangement of the data in the data base is independent of its arrangement on the input records. There is no data redundancy. Each data element occurs only once in the data base, even though it may occur more than once on the data collection instruments and the input records. This has the effect of reducing operational costs and enhancing data storage reliability.

There are no fixed records in the data base. Each data element or group of elements is located at its appropriate place in the data "tree." Consequently, data elements can be retrieved in nearly any combination, either completely or restricted to specific values.

A data base definition is provided. The definition is a listing of the SYSTEM 2000 Natural Language commands needed to create the data base on the computer. Each command describes a data base element, including its component name and number, field length, picture (format), and element type, as well as its location in the data base.

Applications Programs

MISVE users are provided with nine applications programs written in ANSI COBOL. One program utilizes the COBOL sort verb facility; seven of the remaining programs access the data base using SYSTEM 2000 Procedural Language Interface (PL1) facility. One program, EDIT, is a stand alone program. A description of the nine MISVE COBOL Programs follows.

The EDIT Program. The edit program checks the data transcribed from the source data collection instruments for

errors. The various tests verify that the content of each card conforms to the directions prescribed for completion of the data collection instruments. Any cards that contain errors, and a description of each error, are reported. Error free data are stored for subsequent processing by the SORTKEY program.

The SORTKEY Program. The sort preparation program, SORTKEY, processes the source data records produced by the EDIT program. The SORTKEY program performs three basic functions:

- Creates additional transactions for the load or update programs to assure the proper construction of the hierarchical structure of the data base.
- Creates additional transactions for the load or update programs to "spread" common data that are to affect more than one repeating group of data.
- Sorts the source data records into the proper sequence for load or update program processing. The output transactions are separated into two files. One file contains the staff transactions; the second contains the student and programs transactions.

The LOAD Program. The purpose of the LOAD program is to enter large volumes of new data into the data base. The two files produced by the sort preparation program serve as input to the load program.

The UPDATE Program. There are two separate update programs, UPSTAFF and UPSTUD. The first uses the staff transactions from the sort preparation program to modify or add to existing staff data. The second program performs the same type of function but uses the student/programs transactions to maintain the student and programs data.

The TABLELOAD Program. The TABLELOAD program builds the various translation tables contained in the data base. The source data cards for the tables' entries are loaded into the data base. Data for one, some, or all tables can be entered in a single run of the program.

The REPORTS Program. There are three sample standard report programs. Each program produces one type of report from data contained in the data base. Two of the reports are modeled after Office of Education standard reporting forms.

System Documentation

Six documents have been developed for use with MISVE.

1. MISVE Document Catalogue
2. MISVE System Description

3. Application Users' Orientation to MISVE
4. Technical Users' Orientation to MISVE
5. Transfer Planning Concerns
6. MISVE Source Data Instrument Procedures

The MISVE Document Catalogue contains an overview and a table of contents for each of the other five MISVE documents. Each overview describes the purposes for the document, the audience(s) to whom the document is directed, and a summary of its contents.

The MISVE System Description contains information helpful to both the technical and the management user. It provides a general description of MISVE, including items such as the system purposes and rationale, its history, goals, and methodology, and information on GDBMS as this relates to MISVE. The MISVE prototype and its subsystems are described and explained, and goals and limitations for the prototype are set forth.

The Application Users' Orientation to MISVE is directed toward the MISVE manager and application user. The information and software subsystems are discussed in terms which answer anticipated questions at this level. The data base, the data collection instruments, and report generation are explained in non-technical language.

The Technical Users' Orientation to MISVE is directed toward the data base administrator and other technical users. While the document covers the same items as those in the document for application users, the purpose is different. The material contained in this document is written in more technical language. Sufficient detail is provided so that a data base administrator will have an understanding about how to operationalize the prototype.

The Transfer Planning Concerns document is directed to both the technical and management user. It describes what must be done and when planning steps should be accomplished (planning sequence). The planning document is intended to focus the potential user's attention on the essential planning which must be completed prior to adapting, installing, operating, and maintaining MISVE.

The MISVE Source Data Instrument Procedures document is designed for technical users. Included here are the coding instructions, keypunch instructions, and card layout formats for use with the data collection instruments.

These documents are provided to potential system users to guide them in assessing the value of MISVE for their needs and to provide information needed by them to adapt, install, operate, and maintain MISVE.